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TRUONG, Catherine

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CARIOLET, Roland

MADEC, Francois

**<120> CIRCOVIRUS SEQUENCES ASSOCIATED WITH PIGLET WEIGHT LOSS
DISEASE (PWD)**

<130> 065691/0176

<140> US 09/514,245

<141> 2000-02-28

<150> FR 97/15396

<151> 1997-12-05

<160> 170

<170> PatentIn version 3.0

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Asn Leu Pro Phe Leu Phe Cys Leu Trp Arg Gly Arg Phe Gly Arg
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Asp Phe Gln Gly Glu Val Val Phe Trp Cys Pro Leu Pro His Arg
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Glu Ser Glu Arg Asn Arg Pro Ala Glu Arg Ile Leu Gln Arg
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Arg Pro His Thr Tyr Arg Val Trp Ser Ser Ala Glu Pro Gly Glu Ala
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Gly Asp Cys Ser Arg Ala Val Ser Cys Asn Val Cys Glu Lys Phe Pro
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Arg Ala Gly Thr Phe Glu Ser Glu Arg Glu Asp Ala Glu Ala
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ttg gaa gac agc tgt aca cgt cat agt ggg ccc gcc cgg ttg tgg gaa 576
Leu Glu Asp Ser Cys Thr Arg His Ser Gly Pro Ala Arg Leu Trp Glu
170 175 180

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Glu Pro Val Gly Pro Phe Cys Ala Gly His Leu Leu Glu
185 190

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Ala Lys Val Val Gly Trp Ile Ser Trp Arg Arg Ser Cys
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Cys Phe Gly Phe Leu Trp Leu Val Thr Leu Gly Ser Thr Glu
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act gtg tga ccg gta tcc att gac tgt aga gac taa agg ggg tac tgt 768
Thr Val Pro Val Ser Ile Asp Cys Arg Asp Arg Gly Tyr Cys

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tcc ttt ttt ggc ccg cag tat ttt gat tac cag caa tca ggc ccc cca 816
Ser Phe Phe Gly Pro Gln Tyr Phe Asp Tyr Gln Gln Ser Gly Pro Pro
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gga atg gta ctc ctc aac tgc tgt ccc agc tgt aga agc tct cta tcg 864
Gly Met Val Leu Leu Asn Cys Cys Pro Ser Cys Arg Ser Ser Leu Ser
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Glu Asp Tyr Tyr Phe Ala Ile Leu Glu Asp Cys Trp Arg Thr Ile His
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Met Val Phe Ile Phe Ile His Leu Glu Gly Leu Ser Gly Ile Leu
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Ile Val His Lys Ser Thr Leu Pro His Asn Phe Gly Leu Trp
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Ser Gly Arg Arg Ala Ala Leu Trp Cys Gly Gly Arg Ser Ser
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Tyr Arg Gly His Arg Pro Ser Trp Trp Arg Gly Leu Gln Ser Trp His
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Pro Arg Gln Gln Trp Thr Gln His Leu Phe Asp Arg Trp
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Val Leu Leu Leu Trp Val Gln Ile Leu Lys Gly Gly Asn

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Arg Tyr Pro Ser Phe Gly Ala Ile Cys Asn Gly Phe Arg Arg Gly

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Val Pro Asn Met Val Phe Ser Gly Gly Cys Phe Gln Asp Gly Cys Gly

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Gly Gly Ser Val Phe Cys Gly Asn Ala Ser Leu Ala Thr Ser Ser Tyr

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35 40 45

Phe Leu Phe Cys Leu Trp Arg Gly Arg Phe Gly Arg Gly Asn Ser Ser

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Pro Pro Gly Val Cys Glu Phe Cys Glu Ala Asp Phe Gln Gly Glu Val
65 70 75 80

Val Phe Trp Cys Pro Leu Pro His Arg Glu Ser Glu Arg Asn Arg Pro
85 90 95

Ala Glu Arg Ile Leu Gln Arg Arg Pro His Thr Tyr Arg Val Trp Ser
100 105 110

Ser Ala Glu Pro Gly Glu Ala Gln Arg Pro Val Tyr Cys Cys Glu Tyr
115 120 125

Pro Phe Gly Asp Gly Val Phe Gly Asp Cys Ser Arg Ala Val Ser Cys
130 135 140

Asn Val Cys Glu Lys Phe Pro Arg Ala Gly Thr Phe Glu Ser Glu Arg
145 150 155 160

Glu Asp Ala Glu Ala Leu Glu Asp Ser Cys Thr Arg His Ser Gly Pro
165 170 175

Ala Arg Leu Trp Glu Glu Pro Val Gly Pro Phe Cys Ala Gly His Leu
180 185 190

Leu Glu Ala Lys Val Val Gly Trp Ile Ser Trp Arg Arg Ser Cys Cys
195 200 205

Phe Gly Phe Leu Trp Leu Val Thr Leu Gly Ser Thr Glu Thr Val Pro
210 215 220

Val Ser Ile Asp Cys Arg Asp Arg Gly Tyr Cys Ser Phe Phe Gly Pro
225 230 235 240

Gln Tyr Phe Asp Tyr Gln Gln Ser Gly Pro Pro Gly Met Val Leu Leu
245 250 255

Asn Cys Cys Pro Ser Cys Arg Ser Ser Leu Ser Glu Asp Tyr Tyr Phe
260 265 270

Ala Ile Leu Glu Asp Cys Trp Arg Thr Ile His Gly Gly Thr Arg Arg

275 280 285

Pro Ile Ser Ser Gly Pro Thr Leu Cys Pro Phe Pro Ile Asn Lys Leu
290 295 300

Leu Ser Leu Phe Cys Tyr His Ile Val Met Val Phe Ile Phe Ile His
305 310 315 320

Leu Glu Gly Leu Ser Gly Ile Leu Ile Val His Lys Ser Thr Leu Pro
325 330 335

His Asn Phe Gly Leu Trp Leu His Phe Gly Ala His Ser Pro Gly Leu
340 345 350

Cys Ala Arg His Trp Cys Gly Tyr Leu Asn Gly Ala Thr Ala Gly Phe
355 360 365

Phe Tyr Tyr Leu Ala Gly Thr Asn Gln Leu Phe Gly Leu Ala Leu Val
370 375 380

Trp Gly Ser Thr Trp Ser Gly Arg Arg Ala Ala Leu Trp Cys Gly Gly
385 390 395 400

Arg Ser Ser Tyr Arg Gly His Arg Pro Ser Trp Trp Arg Gly Leu Gln
405 410 415

Ser Trp His Pro Arg Gln Gln Trp Thr Gln His Leu Phe Asp Arg Trp
420 425 430

Gly Leu Trp Gly Lys Ile His Ile Pro Phe Tyr Gly Ser Ile Gly Lys
435 440 445

Val Gly Val Gly Gly Trp Cys Arg Leu Arg Gly Gly Thr Gly Arg
450 455 460

Cys Ile Ser Ala Arg His Ser Lys Met Ala Ala Ser Val Leu Leu Leu
465 470 475 480

Trp Val Gln Ile Leu Lys Gly Gly Asn Arg Tyr Pro Ser Phe Gly Ala
485 490 495

Ile Cys Asn Gly Phe Arg Arg Gly Val Pro Asn Met Val Phe Ser Gly

500 505 510

Gly Cys Phe Gln Asp Gly Cys Gly Gly Ser Val Phe Cys Gly Asn
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Ala Ser Leu Ala Thr Ser Ser Tyr Lys Ser Glu Arg Ser Ala Leu Leu
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Tyr
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<213> Type A PWD circovirus

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Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Glu Glu Gly Leu Glu Glu
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Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys Gln
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Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile Glu
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Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr Cys Ser Lys Glu
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Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly Lys Arg
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145 150 155 160

Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Lys Arg Asp
165 170 175

Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly Lys
180 185 190

Ser Gln Trp Ala Arg Asn Phe Ala Glu Pro Arg Asp Thr Tyr Trp Lys
195 200 205

Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Glu Glu Val Val
210 215 220

Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu Arg
225 230 235 240

Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys Gly Gly Thr Val
245 250 255

Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro Gln
260 265 270

Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu Ala Leu Tyr Arg
275 280 285

Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser Thr
290 295 300

Glu Val Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala Leu
305 310 315 320

Phe Pro Tyr Lys Ile Asn Tyr Val Phe Phe Val Ile Thr Ser Trp Phe
325 330 335

Leu Phe Leu Phe Ile Arg Val Phe Gln Asp Lys Phe Ser Glu Leu Tyr
340 345 350

Ile Asn Ser Gln Pro Tyr His Ile Ile Leu Gly Cys Gly Cys Ile Leu
355 360 365

Glu Arg Ile Ala Gln Ala Cys Val Leu Asp Ile Gly Val Gly Ile Met
370 375 380

Glu Pro Gln Leu Val Ser Phe Ile Ile Trp Leu Glu Pro Ile Asn Cys
385 390 395 400

Leu Val Leu Trp Phe Gly Gly Glu Val Pro Gly Val Val Gly Lys Gly
405 410 415

Leu Pro Tyr Gly Val Ala Gly Gly Val Val Asn Ile Gly Val Ile Gly
420 425 430

Gln Val Gly Gly Gly Tyr Lys Val Gly Ile Gln Asp Asn Asn Ser
435 440 445

Gly Pro Asn Thr Ser Leu Ile Arg Gly Asp Gly Val Ser Gly Val Lys

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Phe Ile Phe Ser Leu Ser Asn Thr Val Val Leu Glu Arg Gly Val Gly
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Ala Ala Gly Gly Glu Glu Leu Ala Asp Val Glu Ser Gln Leu Val Asn
485 490 495

Ile Pro Arg Trp Leu Arg Val Ser Ser Ser Tyr Gly Glu Tyr Lys Phe
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Ser Arg Lys Ala Gly Ile Glu Asp Thr Arg Leu Ser Ala Pro Ser Val
515 520 525

Thr Val Ser Glu Gly Gly Val Tyr Gln Ile Trp Ser Ser Pro Glu Asp
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Leu Ile Ile Leu Phe Val Ala Arg Lys Val Trp Lys Arg Val Glu Leu
50 55 60

Leu Thr Ser Arg Gly Leu Arg Ile Leu Leu Arg Ser Arg Leu Leu Thr
65 70 75 80

Arg Ser Gly Ile Leu Val Pro Ala Ala Thr Ser Arg Lys Arg Lys Glu
85 90 95

Pro Thr Ser Arg Ile Lys Asn Thr Ala Val Lys Lys Ala Thr Tyr Leu
100 105 110

Ser Ser Val Glu Leu Arg Gly Thr Arg Gly Ser Ala Ala Thr Cys Leu
115 120 125

Leu Leu Val Pro Phe Trp Arg Arg Gly Leu Trp Leu Pro Ser Ser Phe
130 135 140

Leu Arg Met Glu Ile Ser Ala Gly Trp Leu Asn Phe Lys Ala Gly Arg
145 150 155 160

Cys Arg Ser Val Ile Gly Arg Gln Leu Tyr Thr Ser Trp Ala Arg Pro
165 170 175

Val Val Gly Arg Ala Ser Gly Pro Val Ile Leu Leu Ser Leu Gly Thr
180 185 190

Pro Thr Gly Ser Leu Val Glu Ile Ser Gly Gly Met Asp Ile Met Glu
195 200 205

Lys Lys Leu Leu Phe Trp Met Ile Phe Met Ala Gly Tyr Leu Gly Met
210 215 220

Ile Tyr Asp Cys Val Thr Gly Ile His Leu Arg Leu Lys Gly Val Leu
225 230 235 240

Phe Leu Phe Trp Pro Ala Val Phe Leu Pro Ala Ile Arg Pro Pro Arg
245 250 255

Asn Gly Thr Pro Gln Leu Leu Ser Gln Leu Lys Leu Ser Ile Gly Gly
260 265 270

Leu Leu Leu Cys Asn Phe Gly Arg Leu Leu Glu Asn Asn Pro Arg Arg
275 280 285

Tyr Pro Lys Ala Asp Leu Lys Gln Trp Thr His Pro Val Pro Phe Ser
290 295 300

His Ile Lys Ile Thr Glu Ser Phe Leu Leu Ser His Arg Asn Gly Phe
305 310 315 320

Tyr Phe Tyr Ser Phe Arg Gly Ser Phe Arg Ile Asn Ser Leu Asn Cys
325 330 335

Thr Ile Val Asn Leu Thr Thr Phe Trp Ala Val Val Ala Phe Trp Ser
340 345 350

Ala Pro Arg Pro Val Cys Ser Thr Leu Val Trp Val Phe Lys Trp Ser
355 360 365

His Ser Trp Phe Leu Leu Leu Phe Gly Trp Asn Gln Ser Ile Val Trp
370 375 380

Ser Ser Ser Gly Leu Gly Val Lys Tyr Leu Glu Trp Val Lys Gly Cys
385 390 395 400

Leu Met Val Trp Arg Glu Glu Leu Ile Gly Ser Ala Lys Leu Val Glu
405 410 415

Gly Val Thr Lys Leu Ala Ser Lys Ile Thr Thr Val Asp Pro Thr Pro
420 425 430

Leu Leu Glu Val Met Gly Ser Leu Gly Asn Ser Tyr Leu Ala Phe Leu
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Ile Arg Tyr Trp Lys Gly Arg Gly Arg Gly Leu Val Pro Pro Glu Gly
450 455 460

Gly Arg Asn Trp Pro Met Leu Asn Leu Ser Ser Leu Thr Phe Gln Asp
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Gly Cys Glu Cys Pro Pro Leu Met Val Ser Thr Asn Ser Leu Glu Arg
485 490 495

Arg Glu Leu Lys Ile Pro Val Phe Arg Arg His Leu Arg Phe Leu Lys
500 505 510

Ala Gly Cys Thr Lys Tyr Gly Leu Leu Arg Arg Met Phe Pro Arg Trp
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<213> Type A PWD circovirus

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<213> Type A PWD circovirus

<400> 6

Gly Ala Cys Lys Pro Leu Pro Leu Val Glu Ala Ala Asp Thr Phe Ile

1 5 10 15

Gly Leu Leu Phe Leu Pro Gly Cys Gly Trp Leu Leu His Thr Asn Val

20 25 30

Arg Leu Leu Gly Glu Ser Ser Ser Phe Phe Leu Ile Arg Ser Ser Gly

35 40 45

Ile Glu Arg Lys Ser Lys Thr Gln Pro Ser Ser Pro Lys Ser Ser Pro

50 55 60

Leu Val Gly Arg Trp Pro Asn Ala Phe Lys Ala Leu Phe Cys Val Lys

65 70 75 80

Leu Leu Thr Phe His Tyr Lys Pro Ala Arg Gln Trp Met Ser Phe Ala

85 90 95

Phe Pro Val Ser Trp Cys Phe Leu Ser Tyr Gln Leu Leu Ser Pro Trp

100 105 110

Met Ser Ile Ser His Pro Ala Gly Arg Phe Trp Pro Phe Arg Leu Ser

115 120 125

Arg Asp Val Ala Thr Leu Val Arg Lys Ser Val Pro Asp Lys Thr Val

130 135 140

Thr Ala Ser Cys Asn Gly Thr Val Tyr Thr Leu Phe Lys Arg Pro Ser

145 150 155 160

Ala Ser Ser Lys Phe Thr Leu Pro Phe Ile Cys Cys Arg Ser Gln Phe

165 170 175

Val Ala Thr Cys Thr Met Thr Pro Gly Gly Pro Gln Pro Phe Leu Trp

180 185 190

His Ala Arg Leu Lys Ala Ser Gly Leu Ser Val Gln Phe Gly Leu Leu

195 200 205

Phe Leu His His Ser Pro Tyr Pro Ser Ser Thr Thr Lys Ser Ser

210 215 220

Lys Pro Gln Asn Gly Gln Ser Ser Arg Ser Leu Ser His Ser Arg Tyr

225 230 235 240

Gly Asn Val Thr Ser Val Leu Pro Pro Val Thr Gly Lys Lys Ala Arg

245 250 255

Leu Ile Lys Ile Val Leu Leu Ala Gly Trp Ser His Tyr Glu Glu Val

260 265 270

Ala Thr Gly Ala Thr Ser Ala Arg Arg Leu Ile Val Val Lys Cys Asn

275 280 285

Gln Phe Val Ala Pro Ser Cys Asp Val Ser Thr Gly Ser Pro Arg Asn
290 295 300

Ser Ala Thr Ser Gly Gly Gln Ala Arg Lys Gly Tyr Leu Ile Phe Gln
305 310 315 320

Thr Lys Lys Thr Ile Val Asp Tyr His Asn Lys Asn Lys Asn Met Leu
325 330 335

Thr Lys Ser Leu Asn Glu Ser Asn Tyr Met Phe Leu Gly Trp Met Ile
340 345 350

Lys Pro Gln Pro Gln Met Lys Ser Arg Met Ala Trp Ala Gln Thr Ser
355 360 365

Ser Met Pro Thr Pro Ile Ile Ser Gly Cys Ser Thr Glu Lys Ile Ile
370 375 380

Gln Ser Ser Gly Ile Leu Gln Lys Thr Ser Gln Asn Pro Pro Ser Thr
385 390 395 400

Gly Pro Thr Thr Pro Leu Pro Ser Gly Pro Thr Ala Pro Pro Thr Thr
405 410 415

Leu Ile Pro Thr Met Pro Trp Thr Pro Pro Pro Pro Leu Thr Pro Met
420 425 430

Trp Ser Leu Leu Leu Pro Gly Leu Val Glu Lys Ile Leu Pro Ser Pro
435 440 445

Thr Glu Pro Thr Phe Asn Met Asn Leu Arg Glu Leu Val Thr Thr Asn
450 455 460

Ser Leu Tyr Pro Tyr Pro Thr Pro Ala Ala Gln Pro Pro Ser Ser Ser
465 470 475 480

Ala Ser Thr Ser Asp Ser Thr Leu Met Gly Leu His Ser Arg Thr Asp
485 490 495

Glu Glu Pro Ser Tyr Leu Asn Glu Leu Phe Ala Pro Ile Ser Ser Val
500 505 510

Arg Arg Glu Ala Gly Asp Thr Val Thr Glu Ser Pro Pro Thr Tyr Trp
515 520 525

Ile His Asp Glu Gly Ser Ser Thr Glu Leu Ile Ala Ala Pro Ala Pro
530 535 540

Gly Asp Glu Ala Thr Val Gly Gly Gln Gly Arg Gly Ile Phe Thr Phe
545 550 555 560

Ser Thr Arg Gln Gln Leu Ile
565

<211> 580

<212> PRT

<213> Type A PWD circovirus

<400> 7

Trp Arg Val Glu Ala Ala Ala Gly Arg Cys Arg His Phe His Trp
1 5 10 15

Ala Leu Phe Ala Ala Arg Leu Gly Met Leu Pro Pro His Glu Gly Lys
20 25 30

Ile Ile Arg Gly Leu Leu Phe Val Phe Tyr Pro Leu Lys Trp Asp
35 40 45

Gly Lys Lys Ile Ile Lys Asn Thr Ala Leu Phe Thr Gln Phe Leu Thr
50 55 60

Ser Ser Arg Val Glu Leu Pro Lys Arg Ile Lys Ser Leu Leu Leu Ser
65 70 75 80

Lys Val Leu His Leu Pro Ile Lys Thr Gly Ala Ala Val Asp Leu Phe
85 90 95

Arg Phe Ser Gly Val Leu Leu Ile Phe Phe Val Ala Thr Phe Phe Ala
100 105 110

Val Tyr Lys Asp Leu Thr Ser Ser Arg Pro Val Leu Pro Leu Ala Ala
115 120 125

Val Gln Arg Ser Ser His Thr Gly Lys Gln Leu Arg Pro Arg Gln His
130 135 140

Ser Tyr Gly Leu Leu Lys Arg Tyr Arg Ile His Ser Ile Glu Ala Pro
145 150 155 160

Gln Ser Phe Lys Gln Phe His Ala Pro Leu His Leu Leu Thr Ile Pro
165 170 175

Leu Cys Ser Tyr Val Asp Tyr His Ala Arg Gly Thr Thr Pro Leu Ala
180 185 190

Leu Pro Gly Thr Ile Lys Ser Leu Arg Pro Val Gly Val Pro Leu Arg
195 200 205

Thr Ser Ile Leu Pro Pro Ile Ser Ile Met Ser Phe Phe Asn Asn Asn
210 215 220

Gln Ile Ile Lys Ile Ala Pro Arg Pro Ile Ile Gln Ser Gln Thr Val
225 230 235 240

Pro Ile Trp Gln Ser Tyr Leu Ser Phe Pro Thr Ser Asn Arg Lys Gln
245 250 255

Gly Ala Thr Asn Gln Asn Gly Ala Ile Leu Gly Gly Leu Phe Pro Val
260 265 270

Gly Ser Ser Asp Trp Ser Tyr Phe Ser Glu Ile Pro Pro Asn Ser Ser
275 280 285

Gln Leu Lys Pro Leu Ser Ser Ser Phe Leu Gly Arg Leu Tyr Gly Phe
290 295 300

Ala Ser Lys Phe Cys His Val Trp Gly Thr Gly Lys Glu Trp Ile Phe
305 310 315 320

Tyr Ile Val Ser Asp Lys Asn Asp Cys Arg Leu Pro Lys Lys Glu
325 330 335

Asn Leu Pro Asp Lys Leu Ile Phe Glu Arg Phe Gln Val Tyr Ile Thr
340 345 350

Leu Arg Val Val Tyr Asn Gln Ala Thr Thr Ala Asn Gln Leu Ala Tyr
355 360 365

Gly Leu Gly Thr His Glu Val Asn Thr His Thr Asn Leu His Leu Trp
370 375 380

Leu Gln Asn Arg Lys Asn Asn Pro Gln Phe Trp Asp Ile Thr Gln Asp
385 390 395 400

Leu Glu Pro Lys Pro Thr Phe Tyr Arg Ser His Tyr Thr Phe Pro Gln
405 410 415

Arg Ile Thr His Arg Ser Ser Tyr Asn Ile His Pro Asp Tyr Ala Leu
420 425 430

Asn Thr Ser Pro Thr Val Phe Asn Ala Asp Leu Ile Val Val Thr Ser
435 440 445

Gly Val Gly Arg Gln Asn Ser Thr Ile Pro Asp Arg Pro Tyr Phe Glu
450 455 460

Tyr Lys Ala Lys Arg Ile Arg Tyr Tyr Gln Phe Pro Leu Pro Leu Pro
465 470 475 480

Asn Thr Gly Gly Ser Pro Pro Leu Phe Gln Gly Ile Asn Phe Arg Leu
485 490 495

Glu Asn Val Asn Trp Ser Pro Gln Ser His Gly Gly Arg Ile Thr Leu
500 505 510

Val Phe Glu Arg Ser Leu Arg Ser Asn Phe Ile Gly Thr Lys Arg Arg
515 520 525

Trp Arg Tyr Arg Asn Arg Phe Ala Pro His Val Leu Tyr Pro Arg Arg
530 535 540

Arg Leu Ile Asn Gly Leu His Ser Arg Pro Arg Thr Arg Arg Arg Arg
545 550 555 560

Tyr Arg Arg Arg Pro Trp Thr Met Arg Tyr Phe His Phe Phe His Ala
565 570 575

Ala Thr Thr Asn
580

<210> 8

<211> 557

<212> PRT

<213> Type A PWD circovirus

<400> 8

Leu Ala Ser Arg Cys Arg Cys Cys Arg Pro Leu Thr Leu Ser Phe Ala
1 5 10 15

Leu Cys Ser Phe Arg Gly Ala Val Gly Tyr Ser Thr Pro Thr Gly Tyr
20 25 30

Asp Lys Arg Pro Pro Ser Phe Cys Phe Val Pro Ala Glu Leu Arg Gly
35 40 45

Lys Gln Asn Asn Gln Lys His Arg Pro Leu Asn Pro Leu Pro Tyr Phe
50 55 60

Glu Glu Gly Pro Thr Gln Ser Asn Gln Ser Ala Ser Lys Cys Pro
65 70 75 80

Ser Thr Thr Asn Gly His Gly Ser Gly Cys Arg Ser Leu Ser Leu Phe
85 90 95

Arg Gly Ala Ser Tyr Leu Ile Ser Cys Tyr Leu Leu Gly Cys Val Arg
100 105 110

Thr His Leu Glu Ala Ser Gly Pro Ser Ala Cys Arg Gly Thr Gln Gln
115 120 125

Ser Tyr Gly Lys Pro Ser Pro Thr Lys Pro Ser Gln Leu Arg Ala Thr
130 135 140

Glu Gln Leu Thr His Ser Phe Asn Gly Arg Ala Pro Gln Val Lys Ser
145 150 155 160

Leu Ser Arg Ser Ser Ala Ala Ala His Asn Ser Ser Leu Gln Val Arg
165 170 175

Leu Pro Gly Ala Arg Asn His Ser Ser Gly Thr Pro Gly Tyr Asn Gln

180 185 190

Gln Ala Pro Cys Arg Ser Ser Ala Tyr Phe Tyr Thr Thr Pro His Ile
195 200 205

Asp His Leu Leu Leu Gln Gln Lys Pro His Asn Lys His Ser Thr Val
210 215 220

Lys Pro His Asp Val Ser Val Thr His Gly Thr Asp Met Ser Gln Leu
225 230 235 240

Ser Leu Pro Tyr Gln Glu Lys Lys Pro Gly Cys Tyr Lys Ser Trp Cys
245 250 255

Asp Pro Gly Gly Pro Ile Thr Ser Arg Leu Gln Gln Gly Leu Gln Leu
260 265 270

Leu Glu Arg Asp Ser Ser Lys Ala Ile Lys Ser Ser Gln Gln Leu Val
275 280 285

Ile Trp Pro Pro Val Arg Leu Gly Ile Gln Leu Leu Pro Gly Val Arg
290 295 300

His Gly Lys Gly Met Tyr Phe Leu Asn Ser Leu Arg Lys Gln Met Thr
305 310 315 320

Ile Thr Lys Ile Lys Ile Lys Ser Pro Arg Glu Pro Tyr Ile Arg Gln
325 330 335

Ile Thr Cys Leu Tyr Asp Val Lys Gly Cys Leu Lys Pro Ser His Asn
340 345 350

Cys Lys Pro Ala Cys Leu Gly Pro Arg His Ala Arg Cys Gln His Pro
355 360 365

Tyr Lys Phe Pro Ala Val Val Pro Lys Lys Ala Pro Val Leu Asn
370 375 380

Asn Pro Arg Ala Arg Thr Gln Pro His Leu Val Gln Leu Pro Leu Tyr
385 390 395 400

Leu Ala Ala Lys His His Pro Pro Leu Leu Leu Tyr Leu Pro Leu Gly
405 410 415

Leu Gln His Leu Pro Asn Cys Leu Gln Cys Gly Leu Tyr Cys Cys His
420 425 430

Val Trp Cys Arg Lys Ser Leu His His Pro Arg Gln Pro Leu Ile Ile
435 440 445

Gly Lys Tyr Pro Leu Ile Pro Phe Thr Pro Thr Pro Pro Gln His Arg
450 455 460

Arg Leu Pro Pro Pro Val Pro Arg His Gln Ile Glu Ala Arg Cys Glu
465 470 475 480

Leu Ile Ala Ala Leu Thr Arg Arg Lys His His Thr Cys Ile Arg Phe
485 490 495

Pro Pro Phe Gln Leu Tyr Gly Asp Lys Pro Ala Met Gln Leu Pro Lys
500 505 510

Gln Leu Arg Pro Thr Gly Phe Ile Thr Lys Glu Pro Pro His Lys Trp
515 520 525

Ser Pro Gln Pro Pro Pro Asp Thr Lys Gln Pro Leu Ala Glu Lys Ala
530 535 540

Val Asp Asp Leu Leu Ser Leu Leu Ala Ser Ser Tyr Tyr
545 550 555

<210> 9

<211> 939

<212> DNA

<213> Type A PWD circovirus

<220>

<221> CDS

<222> (1)..(936)

<400> 9
atg cca agc aag aaa agc ggc ccc ccc cat aag agg tgg ttg gtc 48
Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe
1 5 10 15

acc ctt aat aat cct tcc gag gag gag aaa aac aaa ata cgg gag ctt 96
Thr Leu Asn Asn Pro Ser Glu Glu Lys Asn Lys Ile Arg Glu Leu
20 25 30

cca atc tcc ctt ttt gat tat ttt gtt tgt ggc gag gaa ggt ttg gaa 144
Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Glu Glu Leu Glu
35 40 45

gag ggt aga act cct cac ctc cag ggg ttt gcg aat ttt gct aag aag 192
Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys
50 55 60

cag act ttt aac aag gtc aag tgg tat ttt ggt gcc cgc tgc cac atc 240
Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile
65 70 75 80

gag aaa gcg aaa gga acc gac cag cag aat aaa gaa tac tgc agt aaa 288
Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr Cys Ser Lys

85 90 95

gaa ggc cac ata ctt atc gag tgg gct ccc cgg aac cag ggg aag 336
Glu Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly Lys
100 105 110

cgc agc gac ctg tct act gct gtt agt acc ctt ttg gag acg ggg tct 384
Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu Thr Gly Ser
115 120 125

ttg gtt act gta gcc gag cag ttt cct gta acg tat gtt aga aat ttc 432
Leu Val Thr Val Ala Glu Gln Phe Pro Val Thr Tyr Val Arg Asn Phe
130 135 140

cgc ggg ctg gct gaa ctt ttg aaa gtt agc ggg aag atg cag cag cgt 480
Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg
145 150 155 160

gat tgg aag aca gct gta cac gtc ata gtt ggc ccc ggt ttt ggg 528
Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly
165 170 175

aag agc cag tgg gcc cgt aat ttt gct gag cct agg gac acc tac tgg 576
Lys Ser Gln Trp Ala Arg Asn Phe Ala Glu Pro Arg Asp Thr Tyr Trp
180 185 190

aag cct agt aga aat aag tgg tgg gat gga tat cat gga gaa gaa gtt 624
Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Glu Val
195 200 205

gtt gtt ttg gat gat ttt tat ggc tgg tta cct tgg gat gat cta ctg 672
Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu
210 215 220

aga ctg tgg gac cgg tat cca ttg act gta gag act aaa ggg ggt act 720
Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys Gly Thr
225 230 235 240

gtt cct ttt ttg gcc cgc agt att ttg att acc agc aat cag gcc ccc 768
Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro
245 250 255

cag gaa tgg tac tcc tca act gct gtc cca gct gta gaa gct ctc tat 816
Gln Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu Ala Leu Tyr
260 265 270

cggtt att act act ttg caa ttt tgg aag act gct gga gaa caa tcc 864
Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser
275 280 285

acg gag gta ccc gaa ggc cga ttt gaa gca gtt gac cca ccc tgg gcc 912
Thr Glu Val Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala
290 295 300

ctt ttc cca tat aaa ata aat tac tga 939
Leu Phe Pro Tyr Lys Ile Asn Tyr

305 310

<210> 10

<211> 312

<212> PRT

<213> Type A PWD circovirus

<400> 10

Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe
1 5 10 15

Thr Leu Asn Asn Pro Ser Glu Glu Glu Lys Asn Lys Ile Arg Glu Leu
20 25 30

Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Glu Gly Leu Glu
35 40 45

Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys
50 55 60

Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile
65 70 75 80

Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr Cys Ser Lys
85 90 95

Glu Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly Lys
100 105 110

Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu Thr Gly Ser
115 120 125

Leu Val Thr Val Ala Glu Gln Phe Pro Val Thr Tyr Val Arg Asn Phe
130 135 140

Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg
145 150 155 160

Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly

165 170 175

Lys Ser Gln Trp Ala Arg Asn Phe Ala Glu Pro Arg Asp Thr Tyr Trp
180 185 190

Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Glu Glu Val
195 200 205

Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu
210 215 220

Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys Gly Gly Thr
225 230 235 240

Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro
245 250 255

Gln Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu Ala Leu Tyr
260 265 270

Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser
275 280 285

Thr Glu Val Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala
290 295 300

Leu Phe Pro Tyr Lys Ile Asn Tyr
305 310

<210> 11

<211> 702

<212> DNA

<213> Type A PWD circovirus

<220>

<221> CDS

<222> (1)..(699)

<400> 11

atg acg tgg cca agg agg cgt tac cgc aga aga cgg acc cgc ccc cgc 48
Met Thr Trp Pro Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg
1 5 10 15

agc cat ctt gga aac atc ctc cgg aga aga cca tat ttg gta cac ccc 96
Ser His Leu Gly Asn Ile Leu Arg Arg Pro Tyr Leu Val His Pro
20 25 30

gcc ttc aga aac cgt tac aga tgg cgc cga aag acg ggt atc ttc aat 144
Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn
35 40 45

tcc cgc ctt tct aga gaa ttt gta ctc acc ata aga gga gga cac tcg 192
Ser Arg Leu Ser Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser
50 55 60

cag cca tct tgg aat gtt aac gag ctg aga ttc aac atc ggc cag ttc 240
Gln Pro Ser Trp Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe
65 70 75 80

ctc ccc ccc tca ggc ggc acc aac ccc cta ccc cta cct ttc caa tac 288
Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr
85 90 95

tac cgt att aga aag gct aaa tat gaa ttt tac ccc aga gac ccc atc 336
Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile
100 105 110

acc tct aat caa aga ggt gtt ggg tcc act gtt atc ttg gat gcc 384
Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala
115 120 125

aac ttg gta acc ccc tcc acc aac ttg gcc tat gac ccc tat att aac 432
Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn
130 135 140

tac tcc tcc cgc cac acc ata agg cag ccc ttt acc tac cac tcc agg 480
Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg
145 150 155 160

tac ttc acc ccc aaa cca gag cta gac caa aca att gat ttg ttc cag 528
Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe Gln
165 170 175

cca aat aat aaa aga aac cag ctg tgg ctc cat tta aat acc cac acc 576
Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr
180 185 190

aat gtc gag cac aca ggc ctg ggc tat ggc ctc caa aat gca acc aca 624
Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr Thr
195 200 205

gcc caa aat tat gtg gta agg ttg act att tat gta caa ttc aga gaa 672
Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu

210 215 220

ttt atc ctg aaa gac cct cta aat gaa taa
Phe Ile Leu Lys Asp Pro Leu Asn Glu
225 230

702

<210> 12

<211> 233

<212> PRT

<213> Type A PWD circovirus

<400> 12

Met Thr Trp Pro Arg Arg Arg Tyr Arg Arg Arg Arg Arg Thr Arg Pro Arg
1 5 10 15

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His Pro
20 25 30

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn
35 40 45

Ser Arg Leu Ser Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser
50 55 60

Gln Pro Ser Trp Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe
65 70 75 80

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr
85 90 95

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile
100 105 110

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala
115 120 125

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn
130 135 140

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg

145 150 155 160

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe Gln
165 170 175

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr
180 185 190

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr Thr
195 200 205

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu
210 215 220

Phe Ile Leu Lys Asp Pro Leu Asn Glu
225 230

<210> 13

<211> 621

<212> DNA

<213> Type A PWD circovirus

<220>

<221> CDS

<222> (1)..(618)

<400> 13

atg ata tcc atc cca cca ctt att tct act agg ctt cca gta ggt gtc 48
Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val
1 5 10 15

cct agg ctc agc aaa att acg ggc cca ctg gct ctt ccc aca acc ggg 96
Pro Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly
20 25 30

cgg gcc cac tat gac gtg tac agc tgt ctt cca atc acg ctg ctg cat 144
Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His
35 40 45

ctt ccc gct cac ttt caa aag ttc agc cag ccc gcg gaa att tct cac 192
Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His

50 55 60

ata cgt tac agg aaa ctg ctc ggc tac agt cac caa aga ccc cgt ctc 240
Ile Arg Tyr Arg Lys Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu
65 70 75 80

caa aag ggt act cac agc agt aga cag gtc gct gcg ctt ccc ctg gtt 288
Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val
85 90 95

ccg cgg agc tcc aca ctc gat aag tat gtg gcc ttc ttt act gca gta 336
Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val
100 105 110

ttc ttt att ctg ctg gtc ggt tcc ttt cgc ttc gat gtg gca gcg 384
Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala
115 120 125

ggc acc aaa ata cca ctt cac ctt gtt aaa agt ctg ctt agc aaa 432
Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys
130 135 140

att cgc aaa ccc ctg gag gtg agg agt tct acc ctc ttc caa acc ttc 480
Ile Arg Lys Pro Leu Glu Val Arg Ser Ser Thr Leu Phe Gln Thr Phe
145 150 155 160

ctc gcc aca aac aaa ata atc aaa aag gga gat tgg aag ctc ccg tat 528
Leu Ala Thr Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr
165 170 175

ttt gtt ttt ctc ctc gga agg att att aag ggt gaa cac cca cct 576
Phe Val Phe Leu Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro
180 185 190

ctt atg ggg ttg cgg gcc gct ttt ctt gct tgg cat ttt cac tga 621
Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His
195 200 205

<210> 14

<211> 206

<212> PRT

<213> Type A PWD circovirus

<400> 14

Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val
1 5 10 15

Pro Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly

20 25 30

Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His
35 40 45

Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His
50 55 60

Ile Arg Tyr Arg Lys Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu
65 70 75 80

Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val
85 90 95

Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val
100 105 110

Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala
115 120 125

Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys
130 135 140

Ile Arg Lys Pro Leu Glu Val Arg Ser Ser Thr Leu Phe Gln Thr Phe
145 150 155 160

Leu Ala Thr Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr
165 170 175

Phe Val Phe Leu Leu Leu Gly Arg Ile Ile Lys Lys Gly Glu His Pro Pro
180 185 190

Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His
195 200 205

<210> 15

<211> 1767

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(111)

<220>

<221> CDS

<222> (115)..(243)

<220>

<221> CDS

<222> (247)..(267)

<220>

<221> CDS

<222> (271)..(360)

<220>

<221> CDS

<222> (364)..(417)

<220>

<221> CDS

<222> (421)..(447)

<220>

<221> CDS

<222> (451)..(471)

<220>

<221> CDS

<222> (475)..(510)

<220>

<221> CDS

<222> (514)..(516)

<220>

<221> CDS

<222> (520)..(729)

<220>

<221> CDS

<222> (733)..(753)

<220>

<221> CDS

<222> (757)..(759)

<220>

<221> CDS

<222> (763)..(804)

<220>

<221> CDS

<222> (808)..(861)

<220>

<221> CDS

<222> (865)..(984)

<220>

<221> CDS

<222> (988)..(1173)

<220>

<221> CDS

<222> (1177)..(1233)

<220>

<221> CDS

<222> (1237)..(1359)

<220>

<221> CDS

<222> (1363)..(1476)

<220>

<221> CDS

<222> (1480)..(1737)

<220>

<221> CDS

<222> (1741)..(1767)

<400> 15

acc agc gca ctt cgg cag cgg cag cac ctc ggc agc acc tca gca gca 48
Thr Ser Ala Leu Arg Gln Arg Gln His Leu Gly Ser Thr Ser Ala Ala
1 5 10 15

aca tgc cca gca aga aga atg gaa gaa gcg gac ccc aac ccc ata aaa 96
Thr Cys Pro Ala Arg Arg Met Glu Glu Ala Asp Pro Asn Pro Ile Lys
20 25 30

ggg ggg tgt tca ctc tga ata atc ctt ccg aag acg agc gca aga aaa 144
Gly Gly Cys Ser Leu Ile Ile Leu Pro Lys Thr Ser Ala Arg Lys
35 40 45

tac ggg atc ttc caa tat ccc tat ttg att att tta ttg ttg gcg agg 192
Tyr Gly Ile Phe Gln Tyr Pro Tyr Leu Ile Ile Leu Leu Leu Ala Arg
50 55 60

agg gta atg agg aag gac gaa cac ctc acc tcc agg ggt tcg cta att 240
Arg Val Met Arg Lys Asp Glu His Leu Thr Ser Arg Gly Ser Leu Ile
65 70 75

ttg tga aga agc aga ctt tta ata aag tga agt ggt att tgg ttg ccc 288
Leu Arg Ser Arg Leu Leu Ile Lys Ser Gly Ile Trp Val Pro
80 85 90

gct gcc aca tcg aga aag cga aag gaa cag atc agc aga ata aag aat 336
Ala Ala Thr Ser Arg Lys Arg Lys Glu Gln Ile Ser Arg Ile Lys Asn
95 100 105

act gca gta aag aag gca act tac tga tgg agt ttg gag ctc cta gat 384
Thr Ala Val Lys Lys Ala Thr Tyr Trp Ser Val Glu Leu Leu Asp
110 115 120

ctc agg gac aac gga ttg acc ttt cta ctg ctg tga gta cct ttg 432
Leu Arg Asp Asn Gly Val Thr Cys Leu Leu Leu Val Pro Cys Trp
125 130 135

aga gcg gga gtc ttg tga ccg ttg cag agc agc acc ctg taa cgt ttg 480
Arg Ala Gly Val Trp Pro Leu Gln Ser Ser Thr Leu Arg Leu
140 145 150

tca gaa att tcc gcg ggc ttg ctg aac ttt tga aag tga gcg gga aaa 528
Ser Glu Ile Ser Ala Gly Trp Leu Asn Phe Lys Ala Gly Lys
155 160 165

tgc aga agc ttg att gga aga cta atg tac acg tca ttg ttg ggc cac 576
Cys Arg Ser Val Ile Gly Arg Leu Met Tyr Thr Ser Leu Trp Gly His
170 175 180

ctg ggt ttg gta aaa gca aat ggg ctg cta att ttg cag acc cgg aaa 624
Leu Gly Val Val Lys Ala Asn Gly Leu Leu Ile Leu Gln Thr Arg Lys
185 190 195

cca cat act gga aac cac cta gaa aca agt ggt ggg atg gtt acc atg 672
Pro His Thr Gly Asn His Leu Glu Thr Ser Gly Gly Met Val Thr Met

200 205 210 215
gtg aag aag tgg ttg tta ttg atg act ttg atg gct ggc tgc cct ggg 720
Val Lys Lys Trp Leu Leu Leu Met Thr Phe Met Ala Gly Cys Pro Gly
220 225 230
atg atc tac tga gac tgg atc gat atc cat tga ctg tag aga cta 768
Met Ile Tyr Asp Cys Val Ile Asp Ile His Leu Arg Leu
235 240
aag gtg gaa ctg tac ctt ttg ccc gca gta ttc tga tta cca gca 816
Lys Val Glu Leu Tyr Leu Phe Trp Pro Ala Val Phe Leu Pro Ala
245 250 255
atc aga ccc cgt tgg aat ggt act cct caa ctg ctg tcc cag ctg tag 864
Ile Arg Pro Arg Trp Asn Gly Thr Pro Gln Leu Leu Ser Gln Leu
260 265 270
aag ctc tt atc gga gga tta ctt cct tgg tat ttg gga aga atg cta 912
Lys Leu Phe Ile Gly Gly Leu Leu Pro Trp Tyr Phe Gly Arg Met Leu
275 280 285 290
cag aac aat cca cgg agg aag ggg gcc agt tcg tca ccc tt ccc ccc 960
Gln Asn Asn Pro Arg Arg Lys Gly Ala Ser Ser Ser Pro Phe Pro Pro
295 300 305
cat gcc ctg aat ttc cat atg aaa taa att act gag tct tt tta tca 1008
His Ala Leu Asn Phe His Met Lys Ile Thr Glu Ser Phe Leu Ser
310 315 320
ctt cgt aat ggt tt tat tat tca tta agg gtt aag tgg ggg gtc tt 1056
Leu Arg Asn Gly Phe Tyr Tyr Ser Leu Arg Val Lys Trp Gly Val Phe
325 330 335
aaa att aaa ttc tct gaa ttg tac ata cat ggt tac acg gat att gta 1104
Lys Ile Lys Phe Ser Glu Leu Tyr Ile His Gly Tyr Thr Asp Ile Val
340 345 350
ttc ctg gtc gta tat act gtt ttc gaa cgc agt gcc gag gcc tac gtg 1152
Phe Leu Val Val Tyr Val Phe Glu Arg Ser Ala Glu Ala Tyr Val
355 360 365
gtc tac att tcc agc agt ttg tag tct cag cca cag ctg gtt tct tt 1200
Val Tyr Ile Ser Ser Ser Leu Ser Gln Pro Gln Leu Val Ser Phe
370 375 380
gtt gtt tgg ttg gaa gta atc aat agt gaa atc tag gac agg tt ggg 1248
Val Val Trp Leu Glu Val Ile Asn Ser Glu Ile Asp Arg Phe Gly
385 390 395
ggt aaa gta ccg gga gta gta gga gaa ggg ctg ggt tat ggt atg ggc 1296
Gly Lys Val Pro Gly Val Val Gly Glu Gly Leu Gly Tyr Gly Met Ala
400 405 410 415
gga gga gta gtt tac ata ggg gtc ata ggt gag ggc tgg tgc ctt tgg 1344
Gly Gly Val Val Tyr Ile Gly Val Ile Gly Glu Gly Cys Gly Leu Cys

420 425 430

tac aaa gtt atc atc taa aat aac agc act gga gcc cac tcc cct gtc 1392
Tyr Lys Val Ile Ile Asn Asn Ser Thr Gly Ala His Ser Pro Val
435 440 445

acc ctg ggt gat cgg gga gca ggg cca gaa ttc aac ctt aac ctt tct 1440
Thr Leu Gly Asp Arg Gly Ala Gly Pro Glu Phe Asn Leu Asn Leu Ser
450 455 460

tat tct gta gta ttc aaa ggg cac aga gcg ggg gtt tga ccc ccc tcc 1488
Tyr Ser Val Val Phe Lys Gly His Arg Ala Gly Val Pro Pro Ser
465 470 475

tgg ggg aag aaa gtc att aat att gaa tct cat cat gtc cac cgc cca 1536
Trp Gly Lys Lys Val Ile Asn Ile Glu Ser His His His Val His Arg Pro
480 485 490

gga ggg cgt tct gac tgt ggt tcg ctt gac agt ata tcc gaa ggt gcg 1584
Gly Gly Arg Ser Asp Cys Gly Ser Leu Asp Ser Ile Ser Glu Gly Ala
495 500 505

gga gag gcg ggt gtt gaa gat gcc att ttt cct tct cca gcg gta acg 1632
Gly Glu Ala Gly Val Glu Asp Ala Ile Phe Pro Ser Pro Ala Val Thr
510 515 520 525

gtg gcg ggg gtg gac gag cca ggg gcg gcg gcg gag gat ctg gcc aag 1680
Val Ala Gly Val Asp Glu Pro Gly Ala Ala Ala Glu Asp Leu Ala Lys
530 535 540

atg gct gcg ggg gcg gtg tct tct tcg gta acg cct cct tgg ata 1728
Met Ala Ala Gly Ala Val Ser Ser Ser Val Thr Pro Pro Trp Ile
545 550 555

cgt cat atc tga aaa cga aag aag tgc gct gta agt att 1767
Arg His Ile Lys Arg Lys Lys Cys Ala Val Ser Ile
560 565

<210> 16

<211> 569

<212> PRT

<213> Type B PWD circovirus

<400> 16

Thr Ser Ala Leu Arg Gln Arg Gln His Leu Gly Ser Thr Ser Ala Ala
1 5 10 15

Thr Cys Pro Ala Arg Arg Met Glu Glu Ala Asp Pro Asn Pro Ile Lys

20 25 30

Gly Gly Cys Ser Leu Ile Ile Leu Pro Lys Thr Ser Ala Arg Lys Tyr
35 40 45

Gly Ile Phe Gln Tyr Pro Tyr Leu Ile Ile Leu Leu Ala Arg Arg
50 55 60

Val Met Arg Lys Asp Glu His Leu Thr Ser Arg Gly Ser Leu Ile Leu
65 70 75 80

Arg Ser Arg Leu Leu Ile Lys Ser Gly Ile Trp Val Pro Ala Ala Thr
85 90 95

Ser Arg Lys Arg Lys Glu Gln Ile Ser Arg Ile Lys Asn Thr Ala Val
100 105 110

Lys Lys Ala Thr Tyr Trp Ser Val Glu Leu Leu Asp Leu Arg Asp Asn
115 120 125

Gly Val Thr Cys Leu Leu Val Pro Cys Trp Arg Ala Gly Val Trp
130 135 140

Pro Leu Gln Ser Ser Thr Leu Arg Leu Ser Glu Ile Ser Ala Gly Trp
145 150 155 160

Leu Asn Phe Lys Ala Gly Lys Cys Arg Ser Val Ile Gly Arg Leu Met
165 170 175

Tyr Thr Ser Leu Trp Gly His Leu Gly Val Val Lys Ala Asn Gly Leu
180 185 190

Leu Ile Leu Gln Thr Arg Lys Pro His Thr Gly Asn His Leu Glu Thr
195 200 205

Ser Gly Gly Met Val Thr Met Val Lys Lys Trp Leu Leu Leu Met Thr
210 215 220

Phe Met Ala Gly Cys Pro Gly Met Ile Tyr Asp Cys Val Ile Asp Ile
225 230 235 240

His Leu Arg Leu Lys Val Glu Leu Tyr Leu Phe Trp Pro Ala Val Phe

245 250 255

Leu Pro Ala Ile Arg Pro Arg Trp Asn Gly Thr Pro Gln Leu Leu Ser
260 265 270

Gln Leu Lys Leu Phe Ile Gly Gly Leu Leu Pro Trp Tyr Phe Gly Arg
275 280 285

Met Leu Gln Asn Asn Pro Arg Arg Lys Gly Ala Ser Ser Ser Pro Phe
290 295 300

Pro Pro His Ala Leu Asn Phe His Met Lys Ile Thr Glu Ser Phe Leu
305 310 315 320

Ser Leu Arg Asn Gly Phe Tyr Tyr Ser Leu Arg Val Lys Trp Gly Val
325 330 335

Phe Lys Ile Lys Phe Ser Glu Leu Tyr Ile His Gly Tyr Thr Asp Ile
340 345 350

Val Phe Leu Val Val Tyr Thr Val Phe Glu Arg Ser Ala Glu Ala Tyr
355 360 365

Val Val Tyr Ile Ser Ser Ser Leu Ser Gln Pro Gln Leu Val Ser Phe
370 375 380

Val Val Trp Leu Glu Val Ile Asn Ser Glu Ile Asp Arg Phe Gly Gly
385 390 395 400

Lys Val Pro Gly Val Val Gly Glu Gly Leu Gly Tyr Gly Met Ala Gly
405 410 415

Gly Val Val Tyr Ile Gly Val Ile Gly Glu Gly Cys Gly Leu Cys Tyr
420 425 430

Lys Val Ile Ile Asn Asn Ser Thr Gly Ala His Ser Pro Val Thr Leu
435 440 445

Gly Asp Arg Gly Ala Gly Pro Glu Phe Asn Leu Asn Leu Ser Tyr Ser
450 455 460

Val Val Phe Lys Gly His Arg Ala Gly Val Pro Pro Ser Trp Gly Lys

465 470 475 480

Lys Val Ile Asn Ile Glu Ser His His Val His Arg Pro Gly Gly Arg
485 490 495

Ser Asp Cys Gly Ser Leu Asp Ser Ile Ser Glu Gly Ala Gly Glu Ala
500 505 510

Gly Val Glu Asp Ala Ile Phe Pro Ser Pro Ala Val Thr Val Ala Gly
515 520 525

Val Asp Glu Pro Gly Ala Ala Ala Glu Asp Leu Ala Lys Met Ala Ala
530 535 540

Gly Ala Val Ser Ser Ser Val Thr Pro Pro Trp Ile Arg His Ile
545 550 555 560

Lys Arg Lys Lys Cys Ala Val Ser Ile
565

<210> 17

<211> 542

<212> PRT

<213> Type B PWD circovirus

<400> 17

Pro Ala His Phe Gly Ser Gly Ser Thr Ser Ala Ala Pro Gln Gln Gln
1 5 10 15

His Ala Gln Gln Glu Glu Trp Lys Arg Thr Pro Thr Pro Lys Val
20 25 30

Gly Val His Ser Glu Ser Phe Arg Arg Arg Ala Gln Glu Asn Thr Gly
35 40 45

Ser Ser Asn Ile Pro Ile Leu Phe Tyr Cys Trp Arg Gly Gly Arg
50 55 60

Thr Asn Thr Ser Pro Pro Gly Val Arg Phe Cys Glu Ala Asp Phe
65 70 75 80

Ser Glu Val Val Phe Gly Cys Pro Leu Pro His Arg Glu Ser Glu Arg
85 90 95

Asn Arg Ser Ala Glu Arg Ile Leu Gln Arg Arg Gln Leu Thr Asp Gly
100 105 110

Val Trp Ser Ser Ile Ser Gly Thr Thr Glu Pro Val Tyr Cys Cys Glu
115 120 125

Tyr Leu Val Gly Glu Arg Glu Ser Gly Asp Arg Cys Arg Ala Ala Pro
130 135 140

Cys Asn Val Cys Gln Lys Phe Pro Arg Ala Gly Thr Phe Glu Ser Glu
145 150 155 160

Arg Glu Asn Ala Glu Ala Cys Thr Arg His Cys Gly Ala Thr Trp Val
165 170 175

Trp Lys Gln Met Gly Cys Phe Cys Arg Pro Gly Asn His Ile Leu Glu
180 185 190

Thr Thr Lys Gln Val Val Gly Trp Leu Pro Trp Arg Ser Gly Cys Tyr
195 200 205

Leu Leu Trp Leu Ala Ala Leu Gly Ser Thr Glu Thr Val Ser Ile Ser
210 215 220

Ile Asp Cys Arg Asp Arg Trp Asn Cys Thr Phe Phe Gly Pro Gln Tyr
225 230 235 240

Ser Asp Tyr Gln Gln Ser Asp Pro Val Gly Met Val Leu Leu Asn Cys
245 250 255

Cys Pro Ser Cys Arg Ser Ser Leu Ser Glu Asp Tyr Phe Leu Gly Ile
260 265 270

Leu Glu Glu Cys Tyr Arg Thr Ile His Gly Gly Arg Gly Pro Val Arg
275 280 285

His Pro Phe Pro Pro Met Pro Asn Lys Leu Leu Ser Leu Phe Tyr His
290 295 300

Phe Val Met Val Phe Ile Ile His Gly Leu Ser Gly Gly Ser Leu Lys
305 310 315 320

Leu Asn Ser Leu Asn Cys Thr Tyr Met Val Thr Arg Ile Leu Tyr Ser
325 330 335

Trp Ser Tyr Ile Leu Phe Ser Asn Ala Val Pro Arg Pro Thr Trp Ser
340 345 350

Thr Phe Pro Ala Val Cys Ser Leu Ser His Ser Trp Phe Leu Leu Leu
355 360 365

Phe Gly Trp Lys Ser Ile Val Lys Ser Arg Thr Gly Leu Gly Val Lys
370 375 380

Tyr Arg Glu Trp Glu Lys Gly Trp Val Met Val Trp Arg Glu Glu Val

385 390 395 400

Arg Ala Val Ala Phe Val Thr Lys Leu Ser Ser Lys Ile Thr Ala Leu
405 410 415

Glu Pro Thr Pro Leu Ser Pro Trp Val Ile Gly Glu Gln Gly Gln Asn
420 425 430

Ser Thr Leu Thr Phe Leu Ile Leu Tyr Ser Lys Gly Thr Glu Arg Gly
435 440 445

Phe Asp Pro Pro Gly Gly Arg Lys Ser Leu Ile Leu Asn Leu Ile
450 455 460

Met Ser Thr Ala Gln Glu Gly Val Leu Thr Val Val Arg Leu Thr Val
465 470 475 480

Tyr Pro Lys Val Arg Glu Arg Arg Val Leu Lys Met Pro Phe Phe Leu
485 490 495

Leu Gln Arg Arg Trp Arg Gly Trp Thr Ser Gln Gly Arg Arg Arg Arg
500 505 510

Ile Trp Pro Arg Trp Leu Arg Gly Arg Cys Leu Leu Leu Arg Arg Leu
515 520 525

Leu Gly Tyr Val Ile Ser Glu Asn Glu Arg Ser Ala Leu Val
530 535 540

<210> 18

<211> 566

<212> PRT

<213> Type B PWD circovirus

<400> 18

Gln Arg Thr Ser Ala Ala Ala Pro Arg Gln His Leu Ser Ser Asn
1 5 10 15

Met Pro Ser Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg
20 25 30

Trp Val Phe Thr Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Ile
35 40 45

Arg Asp Leu Pro Ile Ser Leu Phe Asp Tyr Phe Ile Val Gly Glu Glu
50 55 60

Gly Asn Glu Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe
65 70 75 80

Val Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Leu Gly Ala Arg
85 90 95

Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr
100 105 110

Cys Ser Lys Glu Gly Asn Leu Leu Met Glu Cys Gly Ala Pro Arg Ser
115 120 125

Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu
130 135 140

Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val
145 150 155 160

Arg Asn Phe Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met
165 170 175

Gln Lys Arg Asp Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro
180 185 190

Gly Cys Gly Lys Ser Lys Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr
195 200 205

Thr Tyr Trp Lys Pro Pro Arg Asn Lys Trp Trp Asp Gly Tyr His Gly
210 215 220

Glu Glu Val Val Val Ile Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp
225 230 235 240

Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys
245 250 255

Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn
260 265 270

Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu
275 280 285

Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr
290 295 300

Glu Gln Ser Thr Glu Glu Gly Gly Gln Phe Val Thr Leu Ser Pro Pro
305 310 315 320

Cys Pro Glu Phe Pro Tyr Glu Ile Asn Tyr Val Phe Phe Ile Thr Ser
325 330 335

Trp Phe Leu Leu Phe Ile Lys Gly Val Gly Gly Leu Ile Val His Thr
340 345 350

Trp Leu His Gly Tyr Cys Ile Pro Gly Arg Ile Tyr Cys Phe Arg Thr
355 360 365

Gln Cys Arg Gly Leu Arg Gly Leu His Phe Gln Gln Phe Val Val Ser
370 375 380

Ala Thr Ala Gly Phe Phe Cys Cys Leu Val Gly Ser Asn Gln Asn Leu
385 390 395 400

Gly Gln Val Trp Gly Ser Thr Gly Ser Gly Arg Arg Arg Ala Gly Leu
405 410 415

Trp Tyr Gly Gly Arg Ser Ser Leu His Arg Gly His Arg Gly Leu Trp
420 425 430

Pro Leu Leu Gln Ser Tyr His Leu Lys Gln His Trp Ser Pro Leu Pro
435 440 445

Cys His Pro Gly Ser Gly Ser Arg Ala Arg Ile Gln Pro Pro Phe Leu
450 455 460

Phe Cys Ser Ile Gln Arg Ala Gln Ser Gly Gly Leu Thr Pro Leu Leu
465 470 475 480

Gly Glu Glu Ser His Ile Ser Ser Cys Pro Pro Pro Arg Arg Ala Phe
485 490 495

Leu Trp Phe Ala Gln Tyr Ile Arg Arg Cys Gly Arg Gly Gly Cys Arg
500 505 510

Cys His Phe Ser Phe Ser Ser Gly Asn Gly Gly Gly Gly Arg Ala
515 520 525

Arg Gly Gly Gly Gly Ser Gly Gln Asp Gly Cys Gly Gly Gly Val
530 535 540

Phe Phe Phe Gly Asn Ala Ser Leu Asp Thr Ser Tyr Leu Lys Thr Lys
545 550 555 560

Glu Val Arg Cys Lys Tyr
565

<210> 19

<211> 1767

<212> DNA

<213> Type B PWD circovirus

<400> 19
aatacttaca ggcacttct ttcgtttca gatatgacgt atccaaggag gcgtaaccga 60

agaagaagac accgcccccc cagccatct ggccagatcc tccgcccgg cccctggctc 120

gtccacccccc gccaccgtta ccgctggaga agaaaaaatg gcatttcaa caccggctc 180

tcccgcacct tcggatatac tgtcaagcga accacagtca gaacgcccctc ctgggcggtg 240

gacatgatga gattcaatat taatgactt cttcccccag gaggggggtc aaaccccccgc 300
tctgtccct ttaataacta cagaataaga aaggtaagg ttgaattctg gcccgtctcc 360
ccgatcaccc agggtgacag gggagtggc tccagtgtc ttatttaga tgataactt 420
gtaacaaagg ccacagccct cacctatgac ccctatgtaa actactcctc ccgcatacc 480
ataaccaggc ccttcccta ccactcccg tactttaccc ccaaaccgt cctagattc 540
actattgatt acttccaacc aaacaacaaa agaaaccagc tgtggctgag actacaaact 600
gctggaaatg tagaccacgt aggccctggc actgcgtcg aaaacagtat atacgaccag 660
gaatacaata tccgtgtac catgtatgt caattcagag aatttaattt taaagacccc 720
ccacttaacc ctaatgaat aataaaaacc attacgaagt gataaaaaag actcagtaat 780
ttatccata tggaaattca gggcatgggg gggaaagggt gacgaactgg ccccttcct 840
ccgtggattt ttctgttagca ttctccaaa ataccaagga agtaatcctc cgataaagag 900
cttctacagc tggacagca gttgaggagt accattccaa cggggctgtga ttgctggtaa 960
tcagaatact gccccccaaa aaaggtaacg ttccacctt agtctctaca gtcaatggat 1020
atcgatcaca cagtctcagt agatcatccc agggcagcca gccataaaag tcatcaataa 1080
caaccacttc ttccatgg taaccatccc accactgtt tctaggttgt ttccagtatg 1140
tggttccgg gtctgcaaaa ttacgagccc atttgctttt accacacccca ggtggcccca 1200
caatgacgtg tacatttagtc ttccaatcac gcttcgtcat ttcccgctc actttcaaaa 1260
gttcagccag ccccgaaaa ttctgacaa acgttacagg gtgctgtct gcaacggtca 1320
ccagactccc gctctccaaac aaggtaactca cagcagtaga caggtaactc cgttgtccct 1380
gagatctagg agtcccacac tccatcgtta agttgccttc ttactgcag tattttttat 1440
tctgctgtatc tggccatcc gctttctcgta tggcagcg ggcacccaaa taccacttca 1500
ctttataaa agtctgttc ttacaaaaat tagcgaaccc ctggagggtga ggtgtcgctc 1560
cttcctcatt accccctcg ccaacaataa aataatcaaa tagggatatt ggaagatccc 1620
gtatccctt gcgctcgctc tcggaaaggat tattcagagt gaacacccac ctttatggg 1680
gttgggtcc gctctccat ttctctgc tggcatgtt gctgctgagg tgctgcccag 1740
tgctgcccgc tgccgaagtgcgttgt 1767

<210> 20

<211> 567

<212> PRT

<213> Type B PWD circovirus

<400> 20

Gly Ala Cys Lys Pro Leu Pro Leu Val Glu Ala Ala Gly Cys Cys Cys
1 5 10 15

Ala Trp Cys Ser Ser His Phe Phe Arg Val Gly Val Gly Tyr Phe Thr
20 25 30

Pro Thr Glu Ser Tyr Asp Lys Arg Leu Arg Ala Cys Ser Phe Val Pro
35 40 45

Asp Glu Leu Ile Gly Ile Gln Asn Asn Gln Gln Arg Pro Pro Tyr His
50 55 60

Pro Leu Val Phe Val Glu Gly Gly Pro Thr Arg Asn Gln Ser Ser Ala
65 70 75 80

Ser Lys Tyr Leu Ser Thr Thr Asn Pro His Gly Ser Gly Cys Arg Ser
85 90 95

Leu Ser Leu Phe Leu Asp Ala Ser Tyr Leu Ile Ser Cys Tyr Leu Leu
100 105 110

Cys Ser Val Ser Pro Thr His Leu Glu Ile Glu Pro Val Val Ser His
115 120 125

Gly Thr Gln Gln Ser Tyr Arg Thr Pro Ser Arg Ser Asp Pro Ser Arg
130 135 140

Gln Leu Ala Ala Gly Gln Leu Thr Gln Phe Asn Gly Arg Ala Pro Gln
145 150 155 160

Val Lys Ser Leu Ser Arg Ser Phe Ala Ser Ala His Asn Ser Ser His
165 170 175

Val Arg Gln Pro Ala Val Gln Thr His Tyr Phe Cys Ile Pro Gln Asn
180 185 190

Gln Leu Gly Pro Phe Trp Met Ser Ser Val Val Phe Cys Thr Thr Pro
195 200 205

His Asn Gly His His Leu Leu Pro Gln Gln His Ser Lys His Ser Ala
210 215 220

Ala Arg Pro His Asp Val Ser Val Thr His Asp Ile Asp Met Ser Gln
225 230 235 240

Leu Ser Leu His Phe Gln Val Lys Lys Pro Gly Cys Tyr Glu Ser Trp
245 250 255

Cys Asp Ser Gly Thr Pro Ile Thr Ser Arg Leu Gln Gln Gly Leu Gln
260 265 270

Leu Leu Glu Lys Asp Ser Ser Lys Arg Pro Ile Lys Ser Ser His Leu
275 280 285

Val Ile Trp Pro Pro Leu Pro Gly Thr Arg Gly Lys Gly Gly Met Gly
290 295 300

Gln Ile Glu Met His Phe Leu Asn Ser Leu Arg Lys Lys Thr Ile Thr
305 310 315 320

Lys Ile Ile Pro Asn Leu Pro Pro Asp Lys Phe Asn Phe Glu Arg Phe
325 330 335

Gln Val Tyr Met Thr Val Arg Ile Asn Tyr Glu Gln Asp Tyr Ile Ser
340 345 350

Asn Glu Phe Ala Thr Gly Leu Gly Val His Asp Val Asn Gly Ala Thr
355 360 365

Gln Leu Arg Leu Trp Leu Gln Asn Arg Lys Asn Asn Pro Gln Phe Tyr
370 375 380

Asp Ile Thr Phe Asp Leu Val Pro Lys Pro Thr Phe Tyr Arg Ser His
385 390 395 400

Tyr Ser Phe Pro Gln Thr Ile Thr His Arg Ser Ser Tyr Asn Val Tyr
405 410 415

Pro Asp Tyr Thr Leu Ala Thr Ala Lys Thr Val Pro Asn Asp Asp Leu
420 425 430

Ile Val Ala Ser Ser Gly Val Gly Arg Asp Gly Gln Thr Ile Pro Ser
435 440 445

Cys Pro Trp Phe Glu Val Lys Val Lys Arg Ile Arg Tyr Tyr Glu Phe
450 455 460

Pro Val Ser Arg Pro Asn Ser Gly Gly Pro Pro Leu Phe Asp Asn
465 470 475 480

Ile Asn Phe Arg Met Met Asp Val Ala Trp Ser Pro Thr Arg Val Thr
485 490 495

Thr Arg Lys Val Thr Tyr Gly Phe Thr Arg Ser Leu Arg Thr Asn Phe
500 505 510

Ile Gly Asn Lys Arg Arg Trp Arg Tyr Arg His Arg Pro His Val Leu
515 520 525

Trp Pro Arg Arg Arg Leu Ile Gln Gly Leu His Ser Arg Pro Arg His
530 535 540

Arg Arg Arg Arg Tyr Arg Arg Arg Pro Tyr Thr Met Asp Ser Phe Ser

545 550 555 560

Leu Leu Ala Ser Tyr Thr Asn

565

<210> 21

<211> 566

<212> PRT

<213> Type B PWD circovirus

<400> 21

Trp Arg Val Glu Ala Ala Ala Gly Arg Cys Cys Arg Leu Leu Leu

1 5 10 15

Met Gly Leu Leu Phe Phe Pro Leu Leu Pro Gly Trp Gly Trp Leu Leu

20 25 30

His Thr Asn Val Arg Phe Leu Gly Glu Ser Ser Ser Arg Leu Phe Ile

35 40 45

Arg Ser Arg Gly Ile Asp Arg Asn Ser Lys Ile Thr Pro Ser Ser Pro

50 55 60

Leu Ser Ser Pro Arg Val Gly Arg Trp Pro Asn Ala Leu Lys Thr Phe

65 70 75 80

Phe Cys Val Lys Leu Leu Thr Phe His Tyr Lys Pro Ala Arg Gln Trp

85 90 95

Met Ser Phe Ala Phe Pro Val Ser Cys Phe Leu Ser Tyr Gln Leu Leu

100 105 110

Ser Pro Leu Lys Ser Ile Ser His Pro Ala Gly Leu Asp Pro Cys Arg

115 120 125

Leu Ser Arg Asp Val Ala Thr Leu Val Lys Asn Ser Leu Pro Leu Arg

130 135 140

Thr Val Thr Ala Ser Cys Cys Gly Thr Val Asn Thr Leu Phe Lys Arg

145 150 155 160

Pro Ser Ala Ser Ser Lys Phe Thr Leu Pro Phe Ile Cys Phe Arg Ser

165 170 175

Gln Phe Val Leu Thr Cys Thr Met Thr Pro Gly Gly Pro His Pro Leu

180 185 190

Leu Leu His Ala Ala Leu Lys Ala Ser Gly Ser Val Val Tyr Gln Phe

195 200 205

Gly Gly Leu Phe Leu His His Ser Pro Trp Pro Ser Ser Thr Thr Thr
210 215 220

Ile Ser Ser Lys Pro Gln Ser Gly Gln Ser Ser Arg Ser Leu Ser His
225 230 235 240

Ser Arg Tyr Gly Asn Val Thr Ser Val Leu Pro Pro Val Thr Gly Lys
245 250 255

Lys Ala Arg Leu Ile Arg Ile Val Leu Leu Val Gly Asn Ser His Tyr
260 265 270

Glu Glu Val Ala Thr Gly Ala Thr Ser Ala Arg Arg Leu Ile Val Glu
275 280 285

Lys Thr Asn Gln Phe Phe Ala Val Ser Cys Asp Val Ser Ser Pro Pro
290 295 300

Trp Asn Thr Val Arg Glu Gly Gly His Gly Ser Asn Gly Tyr Ser Ile
305 310 315 320

Phe Gln Thr Lys Lys Ile Val Glu Tyr His Asn Lys Asn Asn Met Leu
325 330 335

Pro Thr Pro Pro Arg Phe Ile Arg Gln Ile Thr Cys Val His Asn Cys
340 345 350

Pro Tyr Gln Ile Gly Pro Arg Ile Tyr Gln Lys Arg Val Cys His Arg
355 360 365

Pro Arg Arg Pro Arg Cys Lys Trp Cys Asn Thr Thr Glu Ala Val Ala
370 375 380

Pro Lys Lys Gln Gln Lys Thr Pro Leu Leu Tyr His Phe Arg Pro Cys
385 390 395 400

Thr Gln Pro Tyr Leu Val Pro Leu Pro Leu Leu Ala Pro Asn His
405 410 415

Tyr Pro Pro Leu Leu Lys Cys Leu Pro Leu His Pro Ser His Gly
420 425 430

Lys Asn Cys Leu Arg Phe Tyr Cys Cys Gln Leu Gly Ser Gly Gln Gly
435 440 445

Pro His Asp Pro Leu Leu Ala Leu Ile Gly Gly Lys Lys Asn Gln Leu
450 455 460

Ile Leu Ala Cys Leu Pro Pro Lys Val Gly Arg Arg Pro Ser Ser Leu
465 470 475 480

Tyr Gln Ile Glu Asp His Gly Gly Leu Leu Ala Asn Gln Ser His
485 490 495

Asn Ala Gln Cys Tyr Ile Arg Leu His Pro Leu Pro Pro His Gln Leu
500 505 510

His Trp Lys Glu Lys Glu Leu Pro Leu Pro Pro Pro Pro Arg Ala
515 520 525

Leu Pro Pro Pro Pro Asp Pro Trp Ser Pro Gln Pro Pro Pro Thr
530 535 540

Lys Lys Lys Pro Leu Ala Glu Lys Ser Val Asp Tyr Arg Phe Val Phe
545 550 555 560

Ser Thr Arg Gln Leu Tyr
565

<210> 22

<211> 569

<212> PRT

<213> Type B PWD circovirus

<400> 22

Leu Ala Ser Arg Cys Arg Cys Cys Arg Pro Leu Val Glu Ala Ala Val
1 5 10 15

His Gly Ala Leu Leu Ile Ser Ser Ala Ser Gly Leu Gly Met Phe Pro
20 25 30

Pro His Glu Ser Gln Ile Ile Arg Gly Phe Val Leu Ala Leu Phe Tyr
35 40 45

Pro Ile Lys Trp Tyr Gly Lys Ile Ile Lys Asn Asn Ala Leu Leu Thr
50 55 60

Ile Leu Phe Ser Ser Cys Arg Val Glu Leu Pro Glu Ser Ile Lys His
65 70 75 80

Leu Leu Leu Ser Lys Ile Phe His Leu Pro Ile Gln Thr Gly Ala Ala
85 90 95

Val Asp Leu Phe Arg Phe Ser Cys Ile Leu Leu Ile Phe Phe Val Ala
100 105 110

Thr Phe Phe Ala Val Gln His Leu Thr Ser Ser Arg Ser Arg Leu Ser
115 120 125

Leu Pro Thr Val Gln Arg Ser Ser His Thr Gly Gln Gln Leu Ala Pro
130 135 140

Thr Gln His Gly Asn Cys Leu Leu Val Arg Tyr Arg Lys Asp Ser Ile
145 150 155 160

Glu Ala Pro Gln Ser Phe Lys Gln Phe His Ala Pro Phe His Leu Leu

165 170 175

Thr Ile Pro Leu Ser Ile Tyr Val Asp Asn His Pro Trp Arg Pro Thr
180 185 190

Thr Phe Ala Phe Pro Ser Ser Ile Lys Cys Val Arg Phe Gly Cys Val
195 200 205

Pro Phe Trp Arg Ser Val Leu Pro Pro Ile Thr Val Met Thr Phe Phe
210 215 220

His Asn Asn Asn Ile Val Lys Ile Ala Pro Gln Gly Pro Ile Ile Gln
225 230 235 240

Ser Gln Thr Ser Ser Ile Trp Gln Ser Tyr Leu Ser Phe Thr Ser Ser
245 250 255

Tyr Arg Lys Gln Gly Ala Thr Asn Gln Asn Gly Ala Ile Leu Gly Arg
260 265 270

Gln Phe Pro Val Gly Ser Ser Asp Trp Ser Tyr Phe Ser Lys Ile Pro
275 280 285

Pro Asn Ser Gly Gln Tyr Lys Pro Leu Ile Ser Cys Phe Leu Gly Arg
290 295 300

Leu Phe Pro Ala Leu Glu Asp Gly Lys Gly Gly Trp Ala Arg Phe Lys
305 310 315 320

Trp Ile Phe Trp Ile Val Ser Asp Lys Lys Asp Ser Arg Leu Pro Lys
325 330 335

Glu Asn Leu Thr Leu His Pro Thr Lys Leu Ile Leu Asn Glu Ser Asn
340 345 350

Tyr Met Cys Pro Val Ser Ile Thr Asn Arg Thr Thr Tyr Val Thr Lys
355 360 365

Ser Arg Leu Ala Ser Ala Thr Thr Met Glu Leu Leu Lys Tyr Asp Gly
370 375 380

Cys Ser Thr Glu Lys Thr Thr Gln Asn Ser Thr Ile Leu Leu Ser Ile
385 390 395 400

Ser Leu Asn Pro Pro Leu Thr Gly Pro Thr Thr Pro Ser Pro Ser Pro
405 410 415

Pro Ile Ala Pro Pro Thr Thr Met Pro Thr Met Pro Ser Pro Gln Pro
420 425 430

Arg Gln Leu Thr Ile Met Phe Leu Leu Val Pro Ala Trp Glu Gly Thr
435 440 445

Val Arg Pro Ser Arg Pro Ala Pro Gly Ser Asn Leu Arg Leu Arg Glu
450 455 460

Glu Thr Thr Asn Leu Pro Cys Leu Ala Pro Thr Gln Gly Gly Glu Gln
465 470 475 480

Pro Phe Phe Thr Met Leu Ile Ser Asp Thr Trp Arg Gly Pro Pro Arg
485 490 495

Glu Ser Gln Pro Glu Ser Ser Leu Ile Asp Ser Pro Ala Pro Ser Ala
500 505 510

Pro Thr Ser Ser Ala Met Lys Gly Glu Gly Ala Thr Val Thr Ala Pro
515 520 525

Thr Ser Ser Gly Pro Ala Ala Ala Ser Ser Arg Ala Leu Ile Ala Ala
530 535 540

Pro Ala Thr Asp Glu Glu Glu Thr Val Gly Gly Gln Ile Arg Ile Gln
545 550 555 560

Phe Arg Phe Phe His Ala Thr Leu Ile
565

<210> 23

<211> 945

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(942)

<400> 23

atg ccc agc aag aag aat gga aga agc gga ccc caa ccc cat aaa agg 48
Met Pro Ser Lys Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg
1 5 10 15

tgg gtg ttc act ctg aat aat cct tcc gaa gac gag cgc aag aaa ata 96
Trp Val Phe Thr Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Lys Ile
20 25 30

cgg gat ctt cca ata tcc cta ttt gat tat ttt att gtt ggc gag gag 144
Arg Asp Leu Pro Ile Ser Leu Phe Asp Tyr Phe Ile Val Gly Glu Glu
35 40 45

ggg aat gag gaa gga cga aca cct cac ctc cag ggg ttc gct aat ttt 192
Gly Asn Glu Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe
50 55 60

gtg aag aag cag act ttt aat aaa gtg aag tgg tat ttg ggt gcc cgc 240
Val Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Leu Gly Ala Arg
65 70 75 80

tgc cac atc gag aaa ggc aaa gga aca gat cag cag aat aaa gaa tac 288
Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr
85 90 95

tgc agt aaa gaa ggc aac tta ctg atg gag tgg gca gct cct aga tct 336
Cys Ser Lys Glu Gly Asn Leu Leu Met Glu Cys Gly Ala Pro Arg Ser
100 105 110

cag gga caa cgg agt gac ctg tct act gct gtt agt acc ttg ttg gag 384
Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu
115 120 125

agc ggg agt ctg gtt acc gca gag cag cac cct gta acg ttt gtc 432
Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val
130 135 140

aga aat ttc cgc ggg ctg gct gaa ctt ttg aaa gtt agc ggg aaa atg 480
Arg Asn Phe Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met
145 150 155 160

cag aag cgt gat tgg aag act aat gta cac gtc att gtt ggg cca cct 528
Gln Lys Arg Asp Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro
165 170 175

ggg tgg gtt aaa agc aaa tgg gct gtt aat ttt gca gac cgg gaa acc 576
Gly Cys Gly Lys Ser Lys Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr
180 185 190

aca tac tgg aaa cca cct aga aac aag tgg tgg gat ggt tac cat ggt 624
Thr Tyr Trp Lys Pro Pro Arg Asn Lys Trp Trp Asp Gly Tyr His Gly
195 200 205

gaa gaa gtt gtt att gat gac ttt tat ggc tgg ctg ccc tgg gat 672
Glu Glu Val Val Val Ile Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp
210 215 220

gat cta ctg aga ctg tgg gat ctt cca ttg act gta gag act aaa 720
Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys
225 230 235 240

ggg gga act gta cct ttt tgg gcc cgc agt att ctg att acc agc aat 768
Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn
245 250 255

cag acc ccg ttg gaa tgg tac tcc tca act gct gtc cca gct gta gaa 816
Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu
260 265 270

gct ctt tat cgg agg att act tcc ttg gta ttt tgg aag aat gct aca 864
Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr
275 280 285

gaa caa tcc acg gag gaa ggg ggc cag ttc gtc acc ctt tcc ccc cca 912
Glu Gln Ser Thr Glu Glu Gly Gly Gln Phe Val Thr Leu Ser Pro Pro
290 295 300

tgc cct gaa tt cca tat gaa ata aat tac tga 945
Cys Pro Glu Phe Pro Tyr Glu Ile Asn Tyr
305 310

<210> 24

<211> 314

<212> PRT

<213> Type B PWD circovirus

<400> 24

Met Pro Ser Lys Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg
1 5 10 15

Trp Val Phe Thr Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Lys Ile
20 25 30

Arg Asp Leu Pro Ile Ser Leu Phe Asp Tyr Phe Ile Val Gly Glu Glu
35 40 45

Gly Asn Glu Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe
50 55 60

Val Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Leu Gly Ala Arg
65 70 75 80

Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr
85 90 95

Cys Ser Lys Glu Gly Asn Leu Leu Met Glu Cys Gly Ala Pro Arg Ser
100 105 110

Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu
115 120 125

Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val
130 135 140

Arg Asn Phe Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met
145 150 155 160

Gln Lys Arg Asp Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro
165 170 175

Gly Cys Gly Lys Ser Lys Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr
180 185 190

Thr Tyr Trp Lys Pro Pro Arg Asn Lys Trp Trp Asp Gly Tyr His Gly
195 200 205

Glu Glu Val Val Ile Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp
210 215 220

Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys
225 230 235 240

Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn
245 250 255

Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu
260 265 270

Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr
275 280 285

Glu Gln Ser Thr Glu Glu Gly Gly Gln Phe Val Thr Leu Ser Pro Pro
290 295 300

Cys Pro Glu Phe Pro Tyr Glu Ile Asn Tyr
305 310

<210> 25

<211> 702

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(699)

<400> 25

atg acg tat cca agg agg cgt tac cga aga aga aga cac cgc ccc cgc 48
Met Thr Tyr Pro Arg Arg Arg Tyr Arg Arg Arg Arg His Arg Pro Arg
1 5 10 15

agc cat ctt ggc cag atc ctc cgc cgc ccc tgg ctc gtc cac ccc 96
Ser His Leu Gly Gln Ile Leu Arg Arg Pro Trp Leu Val His Pro
20 25 30

cgc cac cgt tac cgc tgg aga agg aaa aat ggc atc ttc aac acc cgc 144
Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg
35 40 45

ctc tcc cgc acc ttc gga tat act gtc aag cga acc aca gtc aga acg 192
Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg Thr
50 55 60

ccc tcc tgg gcg gtg gac atg atg aga ttc aat att aat gac ttt ctt 240
Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe Leu
65 70 75 80

ccc cca gga ggg ggg tca aac ccc cgc tct gtg ccc ttt gaa tac tac 288
Pro Pro Gly Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr Tyr
85 90 95

aga ata aga aag gtt aag gtt gaa ttc tgg ccc tgc tcc ccg atc acc 336
Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile Thr
100 105 110

cag ggt gac agg gga gtg ggc tcc agt gct gtt att tta gat gat aac 384
Gln Gly Asp Arg Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp Asn
115 120 125

ttt gta aca aag gcc aca gcc ctc acc tat gac ccc tat gta aac tac 432
Phe Val Thr Lys Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn Tyr
130 135 140

tcc tcc cgc cat acc ata acc cag ccc ttc tcc tac cac tcc cgg tac 480
Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg Tyr
145 150 155 160

ttt acc ccc aaa cct gtc cta gat ttc act att gat tac ttc caa cca 528
Phe Thr Pro Lys Pro Val Leu Asp Phe Thr Ile Asp Tyr Phe Gln Pro
165 170 175

aac aac aaa aga aac cag ctg tgg ctg aga cta caa act gct gga aat 576
Asn Asn Lys Arg Asn Gln Leu Trp Leu Arg Leu Gln Thr Ala Gly Asn
180 185 190

gta gac cac gta ggc ctc ggc act gcg ttc gaa aac agt ata tac gac 624
Val Asp His Val Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr Asp
195 200 205

cag gaa tac aat atc cgt gta acc atg tat gta caa ttc aga gaa ttt 672
Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu Phe
210 215 220

aat ttt aaa gac ccc cca ctt aac cct taa 702
Asn Phe Lys Asp Pro Pro Leu Asn Pro
225 230

<210> 26

<211> 233

<212> PRT

<213> Type B PWD circovirus

<400> 26

Met Thr Tyr Pro Arg Arg Arg Tyr Arg Arg Arg Arg His Arg Pro Arg
1 5 10 15

Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His Pro
20 25 30

Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg
35 40 45

Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg Thr
50 55 60

Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe Leu
65 70 75 80

Pro Pro Gly Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr Tyr
85 90 95

Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile Thr
100 105 110

Gln Gly Asp Arg Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp Asn
115 120 125

Phe Val Thr Lys Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn Tyr
130 135 140

Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg Tyr
145 150 155 160

Phe Thr Pro Lys Pro Val Leu Asp Phe Thr Ile Asp Tyr Phe Gln Pro
165 170 175

Asn Asn Lys Arg Asn Gln Leu Trp Leu Arg Leu Gln Thr Ala Gly Asn
180 185 190

Val Asp His Val Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr Asp
195 200 205

Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu Phe
210 215 220

Asn Phe Lys Asp Pro Pro Leu Asn Pro
225 230

<210> 27

<211> 315

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(312)

<400> 27
atg gta acc atc cca cca ctt gtt tct agg tgg ttt cca gta tgt ggt 48
Met Val Thr Ile Pro Pro Leu Val Ser Arg Trp Phe Pro Val Cys Gly
1 5 10 15

ttc cgg gtc tgc aaa att agc agc cca ttt gct ttt acc aca ccc agg 96
Phe Arg Val Cys Lys Ile Ser Ser Pro Phe Ala Phe Thr Thr Pro Arg
20 25 30

tgg ccc cac aat gac gtg tac att agt ctt cca atc acg ctt ctg cat 144

Trp Pro His Asn Asp Val Tyr Ile Ser Leu Pro Ile Thr Leu Leu His

35 40 45

ttt ccc gct cac ttt caa aag ttc agc cag ccc gcg gaa att tct gac 192

Phe Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser Asp

50 55 60

aaa cgt tac agg gtg ctg ctc tgc aac ggt cac cag act ccc gct ctc 240

Lys Arg Tyr Arg Val Leu Leu Cys Asn Gly His Gln Thr Pro Ala Leu

65 70 75 80

caa caa ggt act cac agc agt aga cag gtc act ccg ttg tcc ctg aga 288

Gln Gln Gly Thr His Ser Ser Arg Gln Val Thr Pro Leu Ser Leu Arg

85 90 95

tct agg agc tcc aca ctc cat cag taa 315

Ser Arg Ser Ser Thr Leu His Gln

100

<210> 28

<211> 104

<212> PRT

<213> Type B PWD circovirus

<400> 28

Met Val Thr Ile Pro Pro Leu Val Ser Arg Trp Phe Pro Val Cys Gly

1 5 10 15

Phe Arg Val Cys Lys Ile Ser Ser Pro Phe Ala Phe Thr Thr Pro Arg

20 25 30

Trp Pro His Asn Asp Val Tyr Ile Ser Leu Pro Ile Thr Leu Leu His

35 40 45

Phe Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser Asp

50 55 60

Lys Arg Tyr Arg Val Leu Leu Cys Asn Gly His Gln Thr Pro Ala Leu

65 70 75 80

Gln Gln Gly Thr His Ser Ser Arg Gln Val Thr Pro Leu Ser Leu Arg

85 90 95

Ser Arg Ser Ser Thr Leu His Gln

100

<210> 29

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 29

Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe Leu Pro Pro Gly

1 5 10 15

<210> 30

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 30

Gln Gly Asp Arg Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp

1 5 10 15

<210> 31

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 31

Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp Asn Phe Val Thr

1 5 10 15

<210> 32

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 32

Val Asp His Val Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr

1 5 10 15

<210> 33

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 33

tgtggcga

8

<210> 34

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 34

agtttcct

8

<210> 35

<211> 20

<212> DNA

<213> Type A PWD circovirus

<400> 35

tcatttagag ggttttcag

20

<210> 36

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 36
gtcaacct

8

<210> 37

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 37
gtggttgc

8

<210> 38

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 38
agcccagg

8

<210> 39

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 39
ttggctgg

8

<210> 40

<211> 12

<212> DNA

<213> Type A PWD circovirus

<400> 40
tctagctcg gt

12

<210> 41

<211> 12

<212> DNA

<213> Type A PWD circovirus

<400> 41
atctcagctc gt

12

<210> 42

<211> 12

<212> DNA

<213> Type A PWD circovirus

<400> 42
tgtccctc tt

12

<210> 43

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 43
tctctaga

8

<210> 44

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 44
tgtaccaa

8

<210> 45

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 45
tccgtctt

8

<210> 46

<211> 20

<212> DNA

<213> Primer

<400> 46
gtgtgctcga cattgggttg

20

<210> 47

<211> 20

<212> DNA

<213> Primer

<400> 47
tggaaatgtta acgagctgag

20

<210> 48

<211> 20

<212> DNA

<213> Primer

<400> 48

ctcgccagcca tcttggaaatg

20

<210> 49

<211> 20

<212> DNA

<213> Primer

<400> 49

cgcgcgtaat acgactact

20

<210> 50

<211> 26

<212> DNA

<213> Primer

<400> 50

cctgtctact gctgtgagta ccttgt

26

<210> 51

<211> 26

<212> DNA

<213> Primer

<400> 51

gcagtagaca ggtcactccg ttgtcc

26

<210> 52

<211> 20

<212> DNA

<213> Primer

<400> 52

tggaaatgtta actacctcaa

20

<210> 53

<211> 23

<212> DNA

<213> Primer

<400> 53

ggcggcgcca tctgtAACGG ttt

23

<210> 54

<211> 23

<212> DNA

<213> Primer

<400> 54

gatggcgccg aaagacgggt atc

23

<210> 55

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 55

Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe Leu Pro Pro

1 5 10 15

<210> 56

<211> 14

<212> PRT

<213> Type A PWD circovirus

<400> 56

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu

1 5 10

<210> 57

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 57

Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala Asn Phe Val

1 5 10 15

<210> 58

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 58

Phe Thr Ile Asp Tyr Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu

1 5 10 15

<210> 59

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 59

Asp Gln Thr Ile Asp Trp Phe Gln Pro Asn Asn Lys Arg Asn Gln

1 5 10 15

<210> 60

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 60

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr

1 5 10 15

<210> 61

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 61

His Arg Pro Arg Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro

1 5 10 15

<210> 62

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 62

Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His

1 5 10 15

<210> 63

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 63

Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His Pro Arg His Arg
1 5 10 15

<210> 64

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 64

Arg Arg Pro Trp Leu Val His Pro Arg His Arg Tyr Arg Trp Arg
1 5 10 15

<210> 65

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 65

Leu Val His Pro Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly
1 5 10 15

<210> 66

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 66

Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr
1 5 10 15

<210> 67

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 67

Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg Leu Ser Arg
1 5 10 15

<210> 68

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 68

Lys Asn Gly Ile Phe Asn Thr Arg Leu Ser Arg Thr Phe Gly Tyr
1 5 10 15

<210> 69

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 69

Phe Asn Thr Arg Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg
1 5 10 15

<210> 70

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 70

Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg
1 5 10 15

<210> 71

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 71

Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg Thr Pro Ser Trp
1 5 10 15

<210> 72

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 72

Val Lys Arg Thr Thr Val Arg Thr Pro Ser Trp Ala Val Asp Met
1 5 10 15

<210> 73

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 73

Thr Val Arg Thr Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn
1 5 10 15

<210> 74

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 74

Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe
1 5 10 15

<210> 75

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 75

Arg Phe Asn Ile Asn Asp Phe Leu Pro Pro Gly Gly Ser Asn

1 5 10 15

<210> 76

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 76

Asn Asp Phe Leu Pro Pro Gly Gly Ser Asn Pro Arg Ser Val

1 5 10 15

<210> 77

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 77

Pro Pro Gly Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr

1 5 10 15

<210> 78

<211> 15

<212> PRT

<213> Type B PWD circovirus.

<400> 78

Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr Tyr Arg Ile Arg
1 5 10 15

<210> 79

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 79

Arg Ser Val Pro Phe Glu Tyr Tyr Arg Ile Arg Lys Val Lys Val
1 5 10 15

<210> 80

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 80

Phe Glu Tyr Tyr Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro
1 5 10 15

<210> 81

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 81

Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile
1 5 10 15

<210> 82

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 82

Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile Thr Gln Gly Asp

1 5 10 15

<210> 83

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 83

Phe Trp Pro Cys Ser Pro Ile Thr Gln Gly Asp Arg Gly Val Gly

1 5 10 15

<210> 84

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 84

Thr Arg Pro Arg Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro

1 5 10 15

<210> 85

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 85

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His

1 5 10 15

<210> 86

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 86

Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His Pro Ala Phe Arg

1 5 10 15

<210> 87

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 87

Arg Arg Pro Tyr Leu Val His Pro Ala Phe Arg Asn Arg Tyr Arg

1 5 10 15

<210> 88

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 88

Leu Val His Pro Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys

1 5 10 15

<210> 89

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 89

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe

1 5 10 15

<210> 90

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 90

Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn Ser Arg Leu

1 5 10 15

<210> 91

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 91

Arg Arg Lys Thr Gly Ile Phe Asn Ser Arg Leu Ser Arg Glu Phe

1 5 10 15

<210> 92

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 92

Gly Ile Phe Asn Ser Arg Leu Ser Arg Glu Phe Val Leu Thr Ile

1 5 10 15

<210> 93

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 93

Ser Arg Leu Ser Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His
1 5 10 15

<210> 94

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 94

Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser Gln Pro Ser
1 5 10 15

<210> 95

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 95

Leu Thr Ile Arg Gly Gly His Ser Gln Pro Ser Trp Asn Val Asn
1 5 10 15

<210> 96

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 96

Gly Gly His Ser Gln Pro Ser Trp Asn Val Asn Glu Leu Arg Phe
1 5 10 15

<210> 97

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 97

Gln Pro Ser Trp Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln
1 5 10 15

<210> 98

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 98

Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe Leu Pro Pro
1 5 10 15

<210> 99

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 99

Leu Arg Phe Asn Ile Gly Gln Phe Leu Pro Pro Ser Gly Gly Thr
1 5 10 15

<210> 100

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 100

Ile Gly Gln Phe Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro
1 5 10 15

<210> 101

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 101

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Phe Gln

1 5 10 15

<210> 102

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 102

Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr Tyr Arg Ile

1 5 10 15

<210> 103

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 103

Pro Leu Pro Leu Pro Phe Gln Tyr Tyr Arg Ile Arg Lys Ala Lys

1 5 10 15

<210> 104

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 104

Pro Phe Gln Tyr Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr

1 5 10 15

<210> 105

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 105

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro

1 5 10 15

<210> 106

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 106

Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile Thr Ser Asn

1 5 10 15

<210> 107

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 107

Glu Phe Tyr Pro Arg Asp Pro Ile Thr Ser Asn Gln Arg Gly Val

1 5 10 15

<210> 108

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 108

Arg Asp Pro Ile Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val
1 5 10 15

<210> 109

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 109

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp
1 5 10 15

<210> 110

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 110

Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp Asn Phe Val Thr
1 5 10 15

<210> 111

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 111

Ser Ala Val Ile Leu Asp Asp Asn Phe Val Thr Lys Ala Thr Ala
1 5 10 15

<210> 112

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 112

Leu Asp Asp Asn Phe Val Thr Lys Ala Thr Ala Leu Thr Tyr Asp
1 5 10 15

<210> 113

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 113

Phe Val Thr Lys Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn
1 5 10 15

<210> 114

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 114

Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn Tyr Ser Ser Arg
1 5 10 15

<210> 115

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 115

Thr Tyr Asp Pro Tyr Val Asn Tyr Ser Ser Arg His Thr Ile Thr
1 5 10 15

<210> 116

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 116

Tyr Val Asn Tyr Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser

1 5 10 15

<210> 117

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 117

Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg

1 5 10 15

<210> 118

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 118

Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg Tyr Phe Thr Pro

1 5 10 15

<210> 119

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 119

Pro Phe Ser Tyr His Ser Arg Tyr Phe Thr Pro Lys Pro Val Leu
1 5 10 15

<210> 120

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 120

His Ser Arg Tyr Phe Thr Pro Lys Pro Val Leu Asp Phe Thr Ile
1 5 10 15

<210> 121

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 121

Phe Thr Pro Lys Pro Val Leu Asp Phe Thr Ile Asp Tyr Phe Gln
1 5 10 15

<210> 122

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 122

Pro Val Leu Asp Phe Thr Ile Asp Tyr Phe Gln Pro Asn Asn Lys
1 5 10 15

<210> 123

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 123

Phe Thr Ile Asp Tyr Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu
1 5 10 15

<210> 124

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 124

Tyr Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu Arg Leu
1 5 10 15

<210> 125

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 125

Asn Asn Lys Arg Asn Gln Leu Trp Leu Arg Leu Gln Thr Ala Gly
1 5 10 15

<210> 126

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 126

Asn Gln Leu Trp Leu Arg Leu Gln Thr Ala Gly Asn Val Asp His
1 5 10 15

<210> 127

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 127

Leu Arg Leu Gln Thr Ala Gly Asn Val Asp His Val Gly Leu Gly

1 5 10 15

<210> 128

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 128

Thr Ala Gly Asn Val Asp His Val Gly Leu Gly Thr Ala Phe Glu

1 5 10 15

<210> 129

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 129

Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr Asp Gln Glu Tyr

1 5 10 15

<210> 130

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 130

Ala Phe Glu Asn Ser Ile Tyr Asp Gln Glu Tyr Asn Ile Arg Val

1 5 10 15

<210> 131

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 131

Ser Ile Tyr Asp Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val

1 5 10 15

<210> 132

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 132

Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu

1 5 10 15

<210> 133

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 133

Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu Phe Asn Phe Lys

1 5 10 15

<210> 134

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 134

Met Tyr Val Gln Phe Arg Glu Phe Asn Phe Lys Asp Pro Pro Leu

1 5 10 15

<210> 135

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 135

Val Gln Phe Arg Glu Phe Asn Phe Lys Asp Pro Pro Leu Asn Pro

1 5 10 15

<210> 136

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 136

Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala Asn Phe Val

1 5 10 15

<210> 137

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 137

Ser Thr Val Val Ile Leu Asp Ala Asn Phe Val Thr Pro Ser Thr

1 5 10 15

<210> 138

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 138

Ile Leu Asp Ala Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr

1 5 10 15

<210> 139

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 139

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile

1 5 10 15

<210> 140

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 140

Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn Tyr Ser Ser

1 5 10 15

<210> 141

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 141

Leu Ala Tyr Asp Pro Tyr Ile Asn Tyr Ser Ser Arg His Thr Ile

1 5 10 15

<210> 142

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 142

Pro Tyr Ile Asn Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe

1 5 10 15

<210> 143

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 143

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser

1 5 10 15

<210> 144

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 144

His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg Tyr Phe Thr

1 5 10 15

<210> 145

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 145

Gln Pro Phe Thr Tyr His Ser Arg Tyr Phe Thr Pro Lys Pro Glu

1 5 10 15

<210> 146

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 146

Tyr His Ser Arg Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr

1 5 10 15

<210> 147

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 147

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe

1 5 10 15

<210> 148

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 148

Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe Gln Pro Asn Asn

1 5 10 15

<210> 149

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 149

Asp Gin Thr Ile Asp Trp Phe Gln Pro Asn Asn Lys Arg Asn Gln

1 5 10 15

<210> 150

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 150

Asp Trp Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His

1 5 10 15

<210> 151

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 151

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His

1 5 10 15

<210> 152

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 152

Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr Asn Val Glu

1 5 10 15

<210> 153

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 153

Trp Leu His Leu Asn Thr His Thr Asn Val Glu His Thr Gly Leu
1 5 10 15

<210> 154

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 154

Asn Thr His Thr Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu
1 5 10 15

<210> 155

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 155

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr
1 5 10 15

<210> 156

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 156

Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr Thr Ala Gln Asn
1 5 10 15

<210> 157

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 157

Tyr Ala Leu Gln Asn Ala Thr Thr Ala Gln Asn Tyr Val Val Arg

1 5 10 15

<210> 158

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 158

Asn Ala Thr Thr Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr

1 5 10 15

<210> 159

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 159

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg

1 5 10 15

<210> 160

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 160

Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu Phe Ile Leu

1 5 10 15

<210> 161

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 161

Thr Ile Tyr Val Gln Phe Arg Glu Phe Ile Leu Lys Asp Pro Leu

1 5 10 15

<210> 162

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 162

Tyr Val Gln Phe Arg Glu Phe Ile Leu Lys Asp Pro Leu Asn Glu

1 5 10 15

<210> 163

<211> 1759

<212> DNA

<213> Type A PWD circovirus

<400> 163

accagcgcac ttccgcagcg gcagcaccc ggcagcgtca gtggaaatgc caagcaagaa 60

aagcggcccg caacccata agaggtgggt gttcacccctt aataatccctt ccgaggaggaa 120

aaaaaacaaa atacgggagc ttccaatctc cccttttgat tattttgtt gcggagagaga 180

aggttggaa gaggtagaa ctccctcacct ccaggggtt gcgaatttg ctaagaagca 240

gactttaac aaggtgaagt ggtatttgg tgcccgctgc cacatcgaga aagcgaaagg 300

aaccgaccag cagaataaaag aatactgcag taaagaaggc cacataactta tcgagtgtgg 360

<210> 164

<211> 1759

<212> DNA

<213> Type A PWD circovirus

<400> 164
accagcgcac ttccggcagcg gcagcacctc ggcagcgtca gtgaaaatgc caagcaagaa 60
aaggcgcccc caacccata agaggtgggt gttcacccctt aataatcctt ccgaggagga 120
aaaaaaacaaa atacgggagc ttccaatctc ccttttgat tattttgtt gcggagagga 180
aggtttggaa gagggtagaa ctccctcacct ccaggggtt gctaatttg ctaagaagca 240
gacttttaac aaggtgaagt ggtatttgg tgcccgctgc cacatcgaga aagcgaagg 300
aaccgaccag cagaataaaag aatactgcag taaagaaggc cacatactta tcgagtgtgg 360
agctccgcgg aaccagggga agcgcagcga cctgtctact gctgtgagta ccctttgg 420
gacggggtct ttgggtactg tagccgagca gttccctgtta acgtatgtga gaaatttcc 480
cgggctggct gaactttga aagtgagcgg gaagatgcag aagcgtgatt ggaagacagc 540
tgtacacgtc atagtggcc cggccgggtt tggaagagc cagtgccccc gtaatttgc 600
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accattcaat tgggtgtcc agctcagggtt tgggggtgaa gtacctggag tggtaggtaa 1260
agggtgcctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 1320
tggaggggggtt tacaatgggtt gcatccaaaga taacaacagt ggacccaaca cctctttcat 1380
tagaggtgtt ggggtctctg gggtaaaattt catatggatc ctttcttataa cggtagtattt 1440
ggaaaggttag gggtagggggg ttggtgccgc ctgagggggg gaggaaactgg ccgtatgtga 1500
atctgagggtt gttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 1560

attctttaga aaggccgcaa ttgaagatac ccgtcttcg ggcgcacatcg taacggttc 1620
tgaaggcggg gtgtgcacaa tatggcttc tccggaggat gttccaaga tggctgcggg 1680
ggcgggtcct tcttcgcgg taacgcctcc ttggccacgt catcctataa aagtgaaaga 1740
agtgcgcgtgc tgttagtatt 1759

<210> 165
<211> 312
<212> PRT
<213> Type A PWD circovirus

<400> 165

Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe
1 5 10 15

Thr Leu Asn Asn Pro Ser Gly Gly Lys Asn Lys Ile Arg Gly Leu
20 25 30

Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Gly Gly Leu Gly
35 40 45

Gly Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys
50 55 60

Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile
65 70 75 80

Gly Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Gly Tyr Cys Ser Lys
85 90 95

Gly Gly His Ile Leu Ile Gly Cys Gly Ala Pro Arg Asn Gln Gly Lys
100 105 110

Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Gly Thr Gly Ser
115 120 125

Leu Val Thr Val Ala Gly Gln Phe Pro Val Thr Tyr Val Arg Asn Phe
130 135 140

Arg Gly Leu Ala Gly Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg
145 150 155 160

Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly
165 170 175

Lys Ser Gln Trp Ala Arg Asn Phe Ala Gly Pro Arg Asp Thr Tyr Trp
180 185 190

Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Gly Val
195 200 205

Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu
210 215 220

Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Gly Thr Lys Gly Gly Thr
225 230 235 240

Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro
245 250 255

Gln Gly Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Gly Ala Leu Tyr
260 265 270

Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Gly Gln Ser
275 280 285

Thr Gly Val Pro Gly Gly Arg Phe Gly Ala Val Asp Pro Pro Cys Ala
290 295 300

Leu Phe Pro Tyr Lys Ile Asn Tyr
305 310

<210> 166

<211> 312

<212> PRT

<213> Type A PWD circovirus

<400> 166

Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe
1 5 10 15

Thr Leu Asn Asn Pro Ser Gly Gly Lys Asn Lys Ile Arg Gly Leu
20 25 30

Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Gly Gly Leu Gly
35 40 45

Gly Gly Arg Thr Ala His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys
50 55 60

Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile
65 70 75 80

Gly Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Gly Tyr Cys Ser Lys
85 90 95

Gly Gly His Ile Leu Ile Gly Cys Gly Ala Pro Arg Asn Gln Gly Lys

100 105 110

Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Gly Thr Gly Ser
115 120 125

Leu Val Thr Val Ala Gly Gln Phe Pro Val Thr Tyr Val Arg Asn Phe
130 135 140

Arg Gly Leu Ala Gly Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg
145 150 155 160

Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly
165 170 175

Lys Ser Gln Trp Ala Arg Asn Phe Ala Gly Pro Ser Asp Thr Tyr Trp
180 185 190

Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Gly Val
195 200 205

Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu
210 215 220

Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Gly Thr Lys Gly Gly Thr
225 230 235 240

Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro
245 250 255

Gln Gly Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Gly Ala Leu Tyr
260 265 270

Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Gly Gln Ser
275 280 285

Thr Gly Val Pro Gly Gly Arg Phe Gly Ala Val Asp Pro Pro Cys Ala
290 295 300

Leu Phe Pro Tyr Lys Ile Asn Tyr
305 310

<210> 167

<211> 233

<212> PRT

<213> Type A PWD circovirus

<400> 167

Met Thr Trp Pro Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg
1 5 10 15

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Ala His Pro
20 25 30

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn
35 40 45

Ser Arg Leu Ser Thr Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser
50 55 60

Gln Pro Ser Trp Asn Val Asn Tyr Leu Lys Phe Asn Ile Gly Gln Phe
65 70 75 80

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr
85 90 95

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile
100 105 110

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala
115 120 125

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn
130 135 140

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg
145 150 155 160

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe His
165 170 175

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr
180 185 190

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Ala Thr
195 200 205

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu
210 215 220

Phe Ile Leu Lys Asp Pro Leu Asn Lys
225 230

<210> 168

<211> 233

<212> PRT

<213> Type A PWD circovirus

<400> 168

Met Thr Trp Pro Arg Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg
1 5 10 15

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His Pro
20 25 30

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn
35 40 45

Cys Arg Leu Ser Lys Glu Phe Val Ile Thr Ile Arg Gly Gly His Ser
50 55 60

Gln Pro Ser Trp Ile Val Asn Ile Leu Arg Phe Asn Ile Gly Gln Phe
65 70 75 80

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr
85 90 95

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile
100 105 110

Thr Ser Asn Glu Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala
115 120 125

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn
130 135 140

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg
145 150 155 160

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Glu Trp Phe His
165 170 175

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr
180 185 190

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Ala Thr
195 200 205

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu
210 215 220

Phe Ile Leu Lys Asp Pro Leu Asn Lys
225 230

<210> 169

<211> 206

<212> PRT

<213> Type A PWD circovirus

<400> 169

Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val

1 5 10 15

Pro Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly
20 25 30

Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His
35 40 45

Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His
50 55 60

Ile Arg Tyr Arg Glu Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu
65 70 75 80

Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val
85 90 95

Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val
100 105 110

Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala
115 120 125

Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys
130 135 140

Ile Arg Lys Pro Leu Glu Val Arg Ser Ser Thr Leu Phe Gln Thr Phe
145 150 155 160

Leu Ser Ala Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr
165 170 175

Phe Val Phe Leu Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro
180 185 190

Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His
195 200 205

<210> 170

<211> 206

<212> PRT

<213> Type A PWD circovirus

<400> 170

Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val
1 5 10 15

Ala Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly
20 25 30

Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His
35 40 45

Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His
50 55 60

Ile Arg Tyr Arg Glu Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu
65 70 75 80

Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val
85 90 95

Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val
100 105 110

Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala
115 120 125

Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys
130 135 140

Ile Ser Lys Pro Leu Glu Val Ser Ser Thr Leu Phe Gln Thr Phe
145 150 155 160

Leu Ser Ala Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr
165 170 175

Phe Val Phe Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro
180 185 190

Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His
195 200 205